

JPRS 68519

24 January 1977

U S S R

EAST
EUROPE

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 63

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BIBLIOGRAPHIC DATA SHEET		1. Report No. JPRS 68519	2.	3. Recipient's Accession No.																		
4. Title and Subtitle USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS - BIOMEDICAL AND BEHAVIORAL SCIENCES, No. 63		5. Report Date 24 January 1977																				
6.																						
7. Author(s)		8. Performing Organization Rept. No.																				
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201		10. Project/Task/Work Unit No.																				
		11. Contract/Grant No.																				
12. Sponsoring Organization Name and Address As above		13. Type of Report & Period Covered																				
		14.																				
15. Supplementary Notes																						
16. Abstracts The report contains abstracts on aerospace medicine, agrotechnology, bionics and bioacoustics, biochemistry, biophysics, environmental and ecological problems, food technology, microbiology, epidemiology and immunology, marine biology, military medicine, physiology, public health, toxicology, radiobiology, veterinary medicine, behavioral science, human engineering, psychology, psychiatry and related fields.																						
17. Key Words and Document Analysis. 17a. Descriptors																						
<table> <tbody> <tr> <td>USSR</td> <td>Medicine</td> </tr> <tr> <td>Eastern Europe</td> <td>Microbiology</td> </tr> <tr> <td>Aerospace Medicine</td> <td>Physiology</td> </tr> <tr> <td>Agrotechnology</td> <td>Psychology/Psychiatry</td> </tr> <tr> <td>Biology</td> <td>Public Health</td> </tr> <tr> <td>Botany</td> <td>Radiobiology</td> </tr> <tr> <td>Epidemiology/Immunology</td> <td>Toxicology</td> </tr> <tr> <td>Human Engineering</td> <td>Veterinary Medicine</td> </tr> <tr> <td>Marine Biology</td> <td></td> </tr> </tbody> </table>					USSR	Medicine	Eastern Europe	Microbiology	Aerospace Medicine	Physiology	Agrotechnology	Psychology/Psychiatry	Biology	Public Health	Botany	Radiobiology	Epidemiology/Immunology	Toxicology	Human Engineering	Veterinary Medicine	Marine Biology	
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Botany	Radiobiology																					
Epidemiology/Immunology	Toxicology																					
Human Engineering	Veterinary Medicine																					
Marine Biology																						
17b. Identifiers/Open-Ended Terms																						
17c. COSATI Field/Group 2, 5E, 5J, 6, 8A																						
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22151		19. Security Class (This Report) UNCLASSIFIED		21. No. of Pages 88																		
		20. Security Class (This Page) UNCLASSIFIED		22. Price																		

JPRS 68519

24 January 1977

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 63

This serial publication contains abstracts of articles from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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CONTENTS PAGE

I. BIOMEDICAL SCIENCES		
Agrotechnology.....		1
Bioacoustics.....		14
Biochemistry.....		15
Biophysics.....		16
Entomology.....		22
Environmental and Ecological Problems.....		24
Epidemiology.....		32
Hydrobiology.....		40
Immunology.....		41
Industrial Toxicology.....		44
Microbiology.....		48
Military Medicine.....		53
Molecular Biology.....		54
Pharmacology.....		56
Physiology.....		57
Public Health.....		59
Radiobiology.....		65
Therapy.....		68
Veterinary Medicine.....		72
II. BEHAVIORAL SCIENCES		
Engineering Psychology and Ergonomics.....		77
Personnel Psychology.....		78

I. Biomedical Sciences
Agrotechnology

ROMANIA

CONDITIONS FOR DEVELOPMENT OF TOXIGENIC MOULDS IN AGRO-FOOD PRODUCTS

Bucharest IGIENA in Romanian Vol 25 No 3, Jul/Sep 76 pp 235-241

PREDA, N., and GABOR, M., Institute of Medicine and Pharmacy, Cluj-Napoca;
Institute of Hygiene and Public Health, Cluj-Napoca

[Text] [English language abstract supplied by authors] The conditions are presented, necessary for the growth of toxigenic moulds, as well as data on their capacity to elaborate toxin. Based on the author's experience, as well as according to data in the literature, an analysis is made of species which can elaborate aphaletoxin (toxicoumarine), ochratoxin, sterigmatocystine, luteosquirine, patuline, penicilllic acid and cyclopiasonic acid. In connection with development conditions, the favoring factors are commented upon, as well as the inhibitory factors, that could represent as well the prophylactic measures for the prevention of food contamination. References 9: 2 Romanian, 7 Western.

USSR

UDC 632.4

MORPHOLOGICAL PECULIARITIES OF INFECTIOUS STRUCTURES OF PUCCINIA GRAMINIS
F. SP. TRITICI

Moscow IZVESTIYA AKADEMII NAUK SSSR SERIYA BIOLOGICHESKAYA in Russian No 6,
Nov/Dec 76 signed to press 25 Feb 76 pp 875-879

ANDREYEV, L. G., PLOTNIKOVA, YU. M., and SEREZHINA, G. V., Principal Bo-
tanical Garden Academy of Sciences USSR, Moscow

[Text] [English language abstract supplied by authors] Investigation of the differentiation of infectious structures of *Puccinia graminis* f. sp. *tritici* in vitro and on the surface of wheat leaves showed that the parameters of appressoria changed considerably, the parameters of substomatal vesicles were practically stable in various conditions. The ratio of the length of axis, parallel to the germ tube, to the perpendicular axis was 2.1,1, and 0.35 in buffer, on agar and leaf surface respectively. The substomatal vesicle volume was twice as large as the appressorium's. Infectious structures differentiation and their morphological variation under various conditions are of great importance for understanding of initial stages of stem rust causative agent development. Figures 4; table 1; references 10: 4 Russian, 6 Western.

USSR

UDC 632.934

DETERMINATION OF HALF-LIFE PERIOD OF FOSFAMIDE (ROGOR) IN PLANTS

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian Vol 8 No 5,
Sep/Oct 76 signed to press 6 Jun 75 pp 537-541

KOSMATYY, YE. S., and KAVETSKIY, V. N., Ukrainian Scientific Research
Institute of Plant Protection, Kiev

[Abstract] Fosfamide, which is used as a substitute for DDT, penetrates into all of the plant organs. In the course of time these residues breakdown to non-toxic compounds, depending on temperature, solar radiation, enzyme action, oxidation-reduction processes, cell liquor pH, hydrolysis, catalysts, and other still undetermined influences. Breakdown is a function of total content of the pesticide residue. The authors describe fosfamide decomposition in sugar beets as a first order reaction, and have constructed kinetic curves of the decomposition with ground and with seed processing. A simple equation has been presented for calculation of the waiting time for fosfamide (and any other pesticide) in plants, substituting in the equation concentration of the pesticide--determined by analysis--in the plant, and maximum-permissible-level concentration (for fosfamide in sugar beets the MPL is 1 mg/kg). Figure 1; table 1; references 8: 5 Russian, 3 Western.

USSR

UDC 633.854.78:581.134.3:681.531.1

ACCUMULATION OF FATTY ACIDS IN SEED LIPIDS OF THE SUNFLOWER HIGH-OLEIC MUTANT IN THE PROCESS OF RIPENING

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian Vol 8 No 5, Sep/Oct 76 signed to press 29 Jan 76 pp 508-513

KHARCHENKO, L. N., and SOLDATOV, K. L.

[Text] [English language abstract supplied by authors] The mutant form of the sunflower differs from the known varieties by accumulation and metabolism of fatty acids in complex lipids, such as triglycerides, phospholipids and esters of sterols. In the mentioned groups of the sunflower mutant lipids oleic acid is the predominant fatty one, whereas in the variety "VNIIMK" 8931 linolic acid prevails. Interrelation of fatty acids metabolism in the lipid complex and probability of fat-formation interrelation with the genetic apparatus is under discussion. Figure 1; tables 2; references 31: 12 Russian, 19 Western.

USSR

UDC 581.174.1.032.3:582.542.1

HARDENING OF PLANTS AS A MEANS TO INCREASE RESISTANCE OF CHLOROPLAST MEMBRANES TO DEHYDRATION, STUDIED WITH WHEAT SEEDLINGS

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 23 No 5, signed to press 27 Nov 75 pp 921-927

GENEROZOVA, I. P., Institute of Plant Physiology imeni K. A. Timiryazev, Academy of Sciences USSR, Moscow

[Text] [English language abstract supplied by author] The ultrastructure of chloroplasts in hardened-against-drought, and control, 7-day-old wheat seedlings was studied in conditions of dehydration. Loss of weight, from 20 to 55%, by the leaf, resulted in thickening of the tonoplast of hardened seedlings which correlated with good preservation of the chloroplast ultrastructure. The chloroplast membranes were destroyed in control seedlings upon loss of water: grana appeared as eroded spots, intergranal lamellae were partly disrupted, and almost no membranes were detected in the chloroplasts at high degree of dehydration. Stabilization of the membrane phospholipids in the course of preparation of samples for electron microscopy, according to Silva et al., helps to preserve the membrane system of the chloroplast thylakoids in control seedlings but not in hardened seedlings. Hardening of plants against drought therefore presumably stabilizes phospholipids of the chloroplast membranes. Figures 2; references 32: 12 Russian, 20 Western.

USSR

UDC 633.11+576.809.7

FORMATION OF AFLATOXINS IN WHEAT GRAIN INDUCED BY SELF-HEATING AND CHANGE
IN ITS CHEMICAL COMPOSITION BY THE DEVELOPMENT OF STORAGE MOULDS

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 5,
Sep/Oct 76 signed to press 29 Jul 75 pp 741-749

L'VOVA, L. S., SOSEDOV, N. I., GARALL, W., SHVARTSMAN, M. I., SHATILOVA,
T. I., and SHULGINA, A. P., All-Union Scientific Research Institute of Grain
and Grain Products

[Text] [English language abstract supplied by authors] The microbial composition of grain harvested in a wet (1973) and dry (1972) season was investigated. The largest amount of strains of *Aspergillus flavus*--the main producer of aflatoxins--was found in the surface layer of the heap of self-heating grain. The content of toxicogenic strains of *A. flavus* in the grain harvested during the two seasons was stable amounting to 6.8%. Aflatoxins were detected in 17.4% samples of self-heating grain. Self-heating was followed by an accumulation of aflatoxins and deterioration of biochemical and baking properties of grain. Figures 2; tables 6; references 12: 5 Russian, 7 Western.

USSR

AGROCHEMICAL CHARACTERISTICS OF SOILS OF THE ANCIENT TEDZHEN DELTA

Ashkhabad PROBLEMY OSVOYENIYA PUSTYN' in Russian No 5, 1976 signed to press
14 Jul 76 pp 48-54

GAIPOVA, A., and ORAZOVA, L., Scientific Research Institute of Soil Science,
Ministry of Agriculture, Turkmen SSR

[Abstract] Takyrs, Takyrs-like, sandy-desert, meadow, and sandy soils are the commonest soil groups in the ancient Tedzhen delta. Influenced by ancient irrigation and oasis soil formation, they abound in humus, nitrogen, mobile phosphorus, and mobile potassium. They also possess favorable water-physical characteristics. As a result, they have a high level of potential fertility. Table 1; references 16: 15 Russian, 1 Western (English by Soviet authors).

USSR

UDC 691.58

PROTECTIVE POLYMERIC COATINGS FOR HYDRAULIC WORKS IN THE VICINITY OF THE KARAKUM CANAL

Ashkhabad PROBLEMY OSVOYENIYA PUSTYN' in Russian No 5, 1976 signed to press 5 Feb 75 pp 70-72

CHOSHCHSHIYEV, K. CH., and BORISOV, F. B., Institute of Earthquake-Resistant Construction, Gosstroy Turkmen SSR

[Abstract] The Institute of Reinforced Concrete developed a compound composed of epoxy resin, low-molecular liquid polyethylene, synthetic rubber, styrene monomer, etc. It hardens at room or lower temperatures in 18 to 36 hours. Tests showed it to possess high compression and bending strength, adhesiveness (on concrete and steel), elasticity, dielectric properties, low shrinkage, and considerable resistance to air, groundwater, 20% sulfuric acid, and 10% NaOH. The compound, applied to metal and concrete parts of hydraulic structures, provides good protection against abrasion, cavitation, soluble salts, and alkalis. Tables 3.

USSR

UDC 633.51:631.85

EFFECT OF PHOSPHORUS TOPDRESSING ON COTTON YIELDS AND PHOSPHORUS METABOLISM IN THE FLOWERING AND FRUIT FORMATION PERIOD

Tashkent UZBEKSKIY BIOLOGICHESKIY ZHURNAL in Russian No 5, 1976 signed to press 27 Jun 74 pp 24-26

ABDULLAYEV, R. A., Tashkent State University

[Abstract] In pot experiments with cotton (108-F variety), the addition of phosphorus in any stage of plant development boosted yields considerably (by increasing the number of bolls), and markedly enriched the leaves with organic and mineral phosphorus compounds. On days 3 to 5 after phosphorus topdressing, the leaves contained more organic than mineral P₂O₅. On days 9 to 11, the mineral fraction exceeded the organic, but thereafter organic P₂O₅ was again dominant. Thus, the addition of phosphorus to soils with a low content of mobile P₂O₅ and adequate supply of nitrogen produces a substantial response in cotton yields. Tables 3; references 9: 8 Russian, 1 Western.

USSR

UDC 633.51.631.82(584.1)

EFFECT OF TRACE ELEMENTS ON NITROGEN-PHOSPHORUS METABOLISM OF COTTON IN SALINE SOIL

Ashkhabad IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 4, 1976 signed to press 22 Dec 75 pp 39-43

TAYLAKOV, N., Turkmenian Scientific Research Institute for Soil Science

[Abstract] The authors studied the influence of trace elements on the content of nitrogen and phosphorus in the vegetative and generative organs of cotton in saline medosols at the Agrobiological Station of the Turkmenian State Pedagogic Institute imeni V. I. Lenin in 1971. In these newly utilized saline soils, zinc and manganese significantly increase the content of total nitrogen in the organs of the cotton. Copper, boron, zinc and manganese reinforce the accumulation of protein nitrogen in the organs of the cotton as well. The content of phosphorus in the vegetative and generative organs of the cotton is most significantly influenced by zinc, copper and manganese. Tables 3; references 12: 10 Russian, 2 Western.

USSR

UDC 581.192.7

INFLUENCE OF GROWTH STIMULATORS ON THE CONTENT OF ORGANIC ACIDS IN COTTON PLANTS FROM SEEDS STORED FOR VARIOUS PERIODS OF TIME

Ashkhabad IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 4, 1976 signed to press 15 Jun 76 pp 27-30

KOVALENKO, G. I., Institute of Botany, Academy of Sciences TSSR

[Abstract] This study assays content of organic acids and the change in this content in cotton plants from seeds stored for various periods of time under the influence of growth stimulants. Organic acids were determined by the method of thin layer chromatography. It was found that when seeds stored for various periods of time germinate, the quantity of citric and malic acids decreases, particularly in plants from fresh seeds. In cotton plants during the period of formation of the first true leaves, synthesis of citric and malic acids is observed. Preparation SH-23 influences the total organic acids in plants of cotton (during the period of formation of the first true leaves) produced from fresh seeds in a favorable manner, while preparation SH-13 has a similar favorable effect on plants produced from seeds stored from some time. Tables 2; references 7: 5 Russian, 2 Western.

USSR

UDC 581.192.7

STUDY OF THE EFFECT OF ETREL (2-CHLOROETHYLPHOSPHONIC ACID) ON COTTON

Ashkhabad IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 4, 1976 signed to press 23 Feb 76 pp 21-26

AGAKISHIYEV, D., PAL'ANOVA, N. A., Institute of Botany, Academy of Sciences TSSR

[Abstract] The authors studied the influence of etrel on the growth of seeds, growth and development of cotton plants. Laboratory experiments were performed in petri dishes on filter paper, 50 seeds each in ten experiments. Treatment of the seeds with etrel at the optimal concentration (100 mg/l) causes slight stimulation of the process of germination. Treatment of seeds and plants with an etrel solution facilitates some slight increase in accumulation of cotton fruit elements and inhibition of its growth. Etrel, which has no significant influence on the productivity of cotton, accelerates the development of the bolls, helping to increase the quantity of cotton gathered in the first pass. Tables 5; references 9: 6 Russian, 1 CSSR, 2 Western.

USSR

UDC 575:633.11

THE STAGES OF ORGANOGENESIS AND DYNAMICS OF THE GROWTH CONE OF WHEAT

Baku IZVESTIYA AKADEMII NAUK AZERBAYDZHANSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 1, 1976 pp 42-45

GASANOV, N. A.

[Abstract] The studies reported in this article were directed toward investigation of the growth, development of organogenesis and morphophysiological variability of different varieties and forms of wheat under various ecological conditions. This was necessary for prediction of the potential productivity of each variety of wheat as a function of its individual peculiarities for biological testing, evaluation and the effectiveness of the use of certain agrochemical approaches. It was therefore important to determine the regularities of formation of elements of potential and actual productivity of the various varieties of wheat. The varieties which prove superior under the conditions of the stations at Apsheron and Shirvan are reported. Table 1.

USSR

UDC 581.633.11

DYNAMICS OF TOTAL NITROGEN AND CRUDE PROTEIN IN SEEDS OF VARIOUS VARIETIES OF WHEAT BY PHASES OF MATURATION OF THE GRAIN

Baku IZVESTIYA AKADEMII NAUK AZERBAYDZHANSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 1, 1976 pp 39-41

ALI-ZADE, M. A., and GADZHIYEVA, P.

[Abstract] Seeds of several types of wheat were used for a study of changes in the content of total nitrogen and crude protein in the grain in 1971, 72 and 73. Samples were taken during the milky, waxy and fully mature phases of the grain for biochemical analysis. Tables present the results of the studies, indicating that hurgan-3 is the most promising variety of wheat for maximum production of protein at the stage of full maturity. However, as concerns the total of all indicators studied, the most promising variety is sevinge, followed by hurgan-1. Tables 3; references 3 (Russian).

USSR

UDC 633.511:631.527

USE OF MUTANT FORMS FOR BREEDING NEW COTTON VARIETIES

Moscow DOKLADY VASKNIL in Russian No 11, 1976 pp 22-24

ZHALILOV, O. ZH., candidate of biological sciences, Institute of Experimental Plant Biology, Uzbek SSR Academy of Sciences

[Abstract] Investigations conducted during 1969-1974 produced promising new cotton varieties when compared to the control Tashkent 1. The varieties were studied in the conditions of the wilt zone at the Tashkent Zonal Laboratory. The mutant varieties matured 3-6 days earlier than the control, apparently due to the lack of the moisture resistant seed coating found on Tashkent 1. Other parameters investigated and reported in tables include wilt resistance, plant suitability for mechanical picking, and density of vegetation. The cotton bolls were equivalent to Tashkent 1 in quality. Fiber length in the mutant forms surpassed that of Tashkent 1 by 0.6-3.9 mm, and the mutant forms showed a good combination of fiber length and overall production. The combination of radioselection and traditional methods of hybridization promise new varieties of cotton with excellent potential. Tables 3.

USSR

UDC 613.2:632.95

A METHOD OF DETERMINING DALAPON IN CROPS, SOIL, AND COTTON SEEDS

Dushanbe IZVESTIYA AKADEMII NAUK TADZHIKSKOY SSR. OTDELENIYE BIOLOGICHESKIKH NAUK in Russian No 2, 1976 pp 104-107

BARATOV, K. B., BABAYEV, I. I., MEN'SHIKOVA, A. Z., and SHIPKOVA, L. V., Institute of Epidemiology and Hygiene

[Abstract] The method proposed for determining the herbicide Dalapon (d, α -dichloropropionate sodium) in plants, soil, and cotton seeds involves chromatographing specimens in a thin layer of aluminum oxide and silicagel in ethyl alcohol. Dalapon spots are developed by sprinkling the plates with silver nitrate solution. The quantity of the herbicide is determined by visual comparison of the intensity of the color, size of the spots, and height of R_f (length of the path made by the Dalapon spots) of the samples under study with the spots made by known quantities of Dalapon (standard). The R_f of Dalapon varies with the concentration in a sample and the type of adsorbent used. The Dalapon concentration in soil is highest at a depth of 20 to 30 cm 3 months after application. Tables 2; references 5: 4 Russian, 1 Western.

USSR

UDC 0.51.577.391

STRONTIUM-90, CESIUM-137, AND POTASSIUM-40 IN SOILS AND PLANTS OF AZERBAYDZHAN

Baku IZVESTIYA AKADEMII NAUK AZERBAYDZHANSKOY SSR. SERIYA BIOLOGICHESKIKH NAUK in Russian No 2, 1976 pp 15-19

ALIYEV, D. A., and ABDULLAYEV, M. A.

[Abstract] In 1974, cultivated soils and wheat crops were sampled in different parts of Azerbaydzhan to determine the extent of contamination by the 3 isotopes. The strontium-90 concentration was found to be lowest ($\mu\text{Cu}/\text{km}^2$) in the plowed layer of Sierozems on the Kura-Araks Lowland and highest (99 $\mu\text{Cu}/\text{km}^2$) in steppelike Mountain-Cinnamon Brown soils of the Lesser Caucasus. The distribution of cesium-137 was analogous. The potassium-40 concentration was substantially higher than that of strontium-90 and cesium-137, especially in leached Cinnamon-Brown soils of Lenkoran Oblast (8470 $\mu\text{Cu}/\text{km}^2$). In wheat, strontium-90 activity varied widely (12.9 to 30.5 nCi/kg): it was highest in grain grown on steppelike Mountain Cinnamon-Brown soil of the Lesser Caucasus and lowest in grain grown on Chestnut soil of the dry steppes. Cesium-137 activity (0 to 49.5 nCi/kg) displayed the same pattern. Potassium-40 activity was very high. It was lowest in grain and highest in straw in Lenkoran Oblast soils.

USSR

UDC 635.655 + 633.15:001.18

PREDICTING THE OPTIMAL MAKEUP OF COMPONENTS FOR MIXED PLANTINGS OF ANNUAL FEED CROPS

Moscow DOKLADY VASKNIL in Russian No 10, 1975 pp 7-10

TYUTYUNNIKOV, A. I., corresponding member of VASKNIL, YAKOVLEV, A. A., candidate of biological sciences and KATS, Z. G., Siberian Scientific Research Institute for Agricultural Applications of Chemicals

[Abstract] The investigations were conducted under laboratory growing conditions using chernozem soils in polyethylene vessels, with carefully controlled soil composition. The control included corn and soy beans only; test group one had pure corn and soya mixed with a fertilizer $N_1P_1K_1$, one gram per vessel; and test group two had $N_2P_1K_1$ fertilizer, one gram per vessel. Before planting the soy bean seeds were inoculated with active rhizobium bacteria. Measurements and calculations were taken at the stages of branching, budding, and bean formation. The studies indicated that changing the amount of nitrogen in the soil altered the functional level of nitrateductase in the plant. Additional nitrogen in a subsequent application brought a particularly strong induced reaction of inhibition of activity of the enzyme, in both corn species and soy bean varieties. Results indicated that a lack of nutrients in the soil suppressed metabolic action in the plants, while high levels of ions caused overactivity. Proper ion balance for one component often caused an ion factor which inhibited physiological and biochemical processes in the other plant. Consequently, careful attention must be paid to the specific needs of each genotype when planting mixed feed crops. Figures 3; references 6 (Russian).

USSR

UDC 575.1:633.11

GENETIC ANALYSIS OF PROTEIN CONTENT IN THE GRAINS OF HYBRID SOFT SPRING WHEAT

Kiev TSITOLOGIYA I GENETIKA in Russian No 5, 1976 signed to press 7 Jan 1976 pp 450-454

BEBYAKIN, V. M., KRUPNOV, V. A., MARUSHEV, A. I., and BESPYATOVA, L. P., Scientific Research Institute for Agriculture of the South East, Saratov

[Abstract] The cross-breeding involved the types Atlas-66, Selkirk, Diamant, Red River-68, Saratovskaya-36 and -29, and Krasnaya Zvezda. In 1973 and 1974 both hybrids and parent grains were raised under field conditions in 300 cm^2 plots, with three repetitions of the test growth. Then the protein content and trait transference were measured, using various established methodologies. Results are presented in 6 tables. The results indicate inheritance of protein content qualities in 78.6% of hybrids, with positive

transgression in 20% of the hybrids studied. At the same time, protein content in many cases was determined by environmental factors rather than by the genotype of the grain. Figure 1; tables 6; references 5: 3 Russian, 2 English.

USSR

UDC 575.1/3+581.19:633.11

ALCOHOL DEHYDROGENASE IN POLYPLOID WHEATS AND THEIR DIPLOID RELATIVES. THE PHYLOGENY OF TETRAPLOID WHEATS

Moscow GENETIKA in Russian Vol 12 No 11, Nov 76 signed to press 15 Dec 75
pp 22-28

YAASKA, V. E., Institute of Zoology and Botany, Estonian SSR Academy of Sciences, Tartu

[Abstract] A comparative electrophoretic study of alcohol dehydrogenase (ADH) in polyploid wheats of various systematic positions and their diploid relatives including the probable donor genomes was conducted using 20 or 42 hour germinates, electrophoresed on acrylamide gel and visualizing gel bands with ethanol, NAD nitro-ST and phenazinemetasulfate. All lines of hexaploid *Triticum aestivum* and tetraploid wheats of the Emmer group were found to have three dominating isozymes (ADH1, ADH2 and ADH3), while tetraploid *T. timopheevii* Zhuk had one dominating isozyme similar to the least mobile of the triplet (ADH3) and a minor component somewhat more mobile. Electrophoretic analysis of ADH and acid phosphatase in tetraploid wild wheat demonstrated that they are divided into two classes completely corresponding to the presence of a barrier to genetic isolation in hybridization. Results agreed with speciation by esterase isoenzymes and endosperm protein. *Aegilops speltoides* showed three ADH bands, one equivalent to ADH3 and two with less mobility (ADH4 and ADH5), each associated with a minor component. Individual genetic polymorphism of three types was observed in *Ae. speltoides*. The data corresponds to a model of ADH genetic control by two alleles at one locus, with the triplet reflecting the heterozygote plus two homozygotes. The complete absence of the more mobile ADH1 in *T. monococcum* and *Aegilops* and the universal presence of ADH3 indicates that the latter is more ancient and that *T. dicoccoides* and *T. araraticum* are of monophylitic origin with divergence at the tetraploid level. ADH1 and ADH5 arose from ADH3 by mutation. The existence of an unknown or extinct ADH1 donor to the Emmer wheats is less probable. Figures 2; references 24: 6 Russian, 18 Western.

USSR

UDC 576.312:633.11:633.2

EFFECT OF SINGLE AGROPYRON CHROMOSOMES ON COMMON WHEAT

Moscow GENETIKA in Russian Vol 12 No 11, Nov 76 signed to press 12 Dec 75
pp 12-21

SINIGOVETS, M. YE., All-Union Scientific Research Institute of Phytopathology,
Moscow Oblast

[Abstract] The results of transferring a single agropyron (conch grass) chromosome to common wheat were observed using a 56-chromosome wheat-conch grass hybrid of Mil'turm 107 and Agropyron intermedium as donor and Saratovskiy 29 (S-29) as recipient. After three or four back-crosses, self pollination gave wheat plants with 24 chromosomes, including one of seven different Agropyron chromosomes. Homology was determined by observation of metaphase I in meiosis of a diallele cross. Agropyron chromosome one was found to impart stability to powdery mildew and a curve in the stem under the ear. Plants with chromosome two had cylindrical, long, loose ears with the first stalk elongated and the rest shortened, while those with chromosome three had adult plants resistant to brown rust, retarded growth, longer vegetative period and longer, denser ears with underdeveloped grains. Chromosome four also produced adult resistance to brown rust, slower growth than produced by chromosome three, bushy, dense ears and tall plants. Plants with chromosome five were short, with thin, conical, tight ears and mature, glassy grain. Chromosome six decreased height and caused the development of narrow, partly twisted leaves while chromosome seven retarded growth and increased the number of grains per ear. The added chromosome had no negative effect on conjugation in metaphase I, except a small number of univalents in disomal plants with chromosomes one, two and six. Most of the lines had fertility and grain content unaltered from that of S-29, with chromosomes three and seven increasing grain content and chromosome two giving the lowest fertility. These results differ from those obtained with wheat-rye chromosome additions. Plants with chromosome one are most promising for practical application.

Figures 1; tables 4; references 13: 6 Russian, 7 Western.

USSR

UDC 575.12:575.2:633.1

MORPHOBIOPTYPIC VARIABILITY OF HYBRID WINTER WHEAT POPULATIONS UNDER
IRRIGATION

Moscow GENETIKA in Russian Vol 12 No 11, Nov 76 signed to press 8 Dec 75
pp 5-14

ORLYUK, A. P., and BAZALIY, V. V., Ukrainian Scientific Research Institute
of Irrigation Agriculture, Kherson

[Abstract] The mechanism of formation of the basic morphological characteristics of stem length, duration of vegetative period, and productivity,

was studied in the hybridization of winter wheat under irrigation. Random crossings of 17 wheat types demonstrated heterosis, complete dominance, partial dominance, complete recessiveness and depression in stem length, number of spikes and grain weight. Transgressions were observed in stability to beating down, stem length and productivity. As the degree of dominance of tall growth increased the short-stem transgressions, desirable in irrigation, became less frequent. The short-stemmed recombinants had as heavy and productive ears as long-stemmed plants with the same vegetative period, but the short-stem results of two crosses had greater productivity heredity. However, many short forms showed decreased viability in close planting and the number of short-stem results decreased with succeeding generations, due to decreased competitive ability. This was not true in widely spaced planting. A scheme for selecting short-stem forms under irrigation is recommended. Higher productivity in the hybrids correlated with early ripening, characterized by longer periods of grain formation, 44-48 days, which was also correlated with greater variability in yield. While bearded and unbearded recombinants were more productive than the parent generation, differences between productivity in the two types were found in only one case. Tables 7; references 17: 12 Russian, 5 Western.

Bioacoustics

USSR

UDC 359.6:658.311.44:681.883

SOME ASPECTS OF THE OCCUPATIONAL SCREENING OF UNDERWATER ACOUSTIC TECHNICIANS

Moscow VOYENNO-MEDITSINSKIY ZHURNAL in Russian No 11, 1976 pp 61-64

CHEREDNIK, L. A., Lt. Col., medical service, OBORKIN, A. S., Capt., m.s.
and GAYDOV, A. I., Senior Lt., m. s.

[Abstract] A list of psychophysiological qualities, skills, and capabilities required for successful mastery of underwater acoustics was compiled from an analysis of questionnaires filled out by experienced instructors and used as a basis for screening applicants for training in this specialty. They included both technical (absolute sensitivity of the auditory and visual analyzers, highly differentiated sensitivity of the auditory analyzer to changes in pitch, capacity for recognizing a variety of sounds, good auditory and visual memory, ability to concentrate, etc.) and general (emotional stability, decisiveness, neatness, conscientiousness, etc.) qualities. Candidates are subjected to a variety of instrumental and psychological tests designed to determine the basic aptitude, attitude, and trainability of the young applicants. Of the greatest prognostic value is a test involving the ability to discriminate and remember tape recorded sounds characteristic of 7 different types of vessels (trawler, motor ship, transport, destroyer, tugboat, submarine, landing vessel). Table 1; no references.

Biochemistry

USSR

UDC 547.963.32:628.356

CHARACTERISTICS OF DNA OF ACTIVE SLUDGE WHICH HAS ADAPTED TO VARIOUS SOURCES OF CARBON

Kiev UKRAINSKIY BIORHIMICHNIY ZHURNAL in Ukrainian Vol 48 No 5, 1976 signed to press 1 Feb 75 pp 547-550

SHCHETININ, A. I., Department of Water Economy of Industrial Enterprises, All-Union Scientific Research Institute "VODGEO," Kharkov

[Text] [English language abstract supplied by author] Some characteristics are presented for DNA of active sludge adapted to domestic waste, diethylene glycol, mannitol and glycerol. A significant shift towards CG-type is found for the nucleotide composition of the DNA of active sludge adapted to glycerol and mannitol. The fusion curves for DNA of the active sludge indicate the presence of some aggregation of the molecules in it. In the case of the diethylene glycol-adapted active sludge DNA fusion, two transitions are observed corresponding to 37.8 and 68.2 mol% of GC-pairs, that may be explained by bimodality in distribution of the number of species of the free-living bacteria according to the DNA nucleotide composition. The fusion curves for DNA of the active ooze adapted to domestic waste, mannitol and glycerol, has no clearly pronounced transitions, and this may be explained by the presence of other groups of microorganisms in these sludges, besides bacteria. Heterogeneity of DNA relative to the nucleotide composition with transition to a single source of carbon decreases in the series: initial active sludge > active sludge adapted to mannitol > glycerol > diethylene glycol. Figure 1; tables 2; references 14: 11 Russian, 3 Western.

Biophysics

GDR/USSR

UDC 911.3:616-02:613.6/

THE PROBLEM OF THE BIOLOGICAL ACTION OF THE ELECTROMAGNETIC FIELDS OF
INDUSTRIAL GENERATORS

Berlin ABH. AKD. WISS. DDR. Jrg. 1974 in German pp 235-240

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract
No 9.36.138 by A. S.]

KOESSLER, F. and KUPFER, J.

[Text] The German Democratic Republic at the present time has a group of some 9,000 workers suffering from occupational industrial illnesses. The problem then arises of getting some sort of order in the working and dwelling places of these workers; places of employment should be located appropriate distances from industrial generators, and medical control should be exercised over high-frequency electromagnetic waves. Data are to be grouped in two categories, thermal and others. The great significance of the symposium held in Warsaw, Poland in 1973, is noted; this symposium established unique standards for the socialist countries. 16 biblio.

USSR

UDC 581.132

EFFECT OF A MAGNETIC FIELD ON THE BIOELECTRICAL ACTIVITY OF PLANTS

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 23 No 5, signed to press 10 Feb 76 pp 1074-1076

TRAVKIN, M. P., Belgorod Pedagogical Institute

[Abstract] An earlier report (Ibid. Vol 19 1972 p 448) revealed that the bioelectric activity of scraped tradescanthia cuttings is changed under the influence of weak 0.1-1.73 oe magnetic fields (MF). The weakest field (0.1 oe) decreased bioelectric activity; when it was raised from 0.6 to 1.73 oe, the activity increased. A ring magnet was used. One of the response reactions of plants to a weak MF may be changes in the BEP and bioelectric activity of the plants indicating altered permeability of the cell membrane and an effect on oxidation and phosphorylation processes associated with cellular electrokinetics. The author has subjected cuttings of Tradescantia zebrina multicolor and Setcreasea purpurea to various MF: a 415 oe constant MF; a 30 oe pulsed MF; a 10 oe MF; and a 0.2 oe geomagnetic field (control). No changes in the variable component BEP were found under the action of the weak MF (10 oe) over 1-3 days. The variable component BEP of plants placed in the constant MF (415 oe) and the variable MF (30 oe) for a 2 week period was expressed substantially weaker than in the controls. Figures 2; references 5 (Russian).

USSR

UDC 616-036.3:576.8.095.12

PREMORBID STATES ASSOCIATED WITH VIBRATION EFFECTS

Kiev VRACHEBNOYE DELO in Russian No 9, Sep 76 p 131-133

ORLENKO, V. I., PIPPALYY, G. P., and NAUMENKO, B. S., Krivoy Rog Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Text] [English language abstract supplied by authors] Based on personal experience with 200 miners of Krivbass the authors analyze the problem of diagnosis of premorbid conditions in those working with vibroinstruments. The following forms of determination of these premorbid conditions are distinguished: 1) vegetative polyneuralgia; 2) peripheral angiospasm; 3) neuromyalgia; 4) astheno-vegetative reactions; 5) vegetative-vascular dystonia. The role of early diagnosis of premorbid state for the organization of rehabilitation measures is emphasized. References 7 (Russian).

USSR

UDC 616-001.34:576.8.097.3

NEUROHUMORAL CHANGES IN PATIENTS WITH VIBRATION DISEASE

Kiev VRACHEBNOYE DELO in Russian No 9, Sep 76 pp 122-126

KOSTYUK, I. F., Department of Hospital Therapy and Problem Cardiology Laboratory, Khar'kov Medical Institute

[Text] [English language abstract supplied by author] Results are reported of an investigation of the activity of the sympathico-adrenal, renin-angiotensin-aldosterone, kininogen-kinin systems in comparison with clinical symptoms and hemodynamic changes among 205 patients with initial and moderate stages of vibration disease (metalcutters-65.8%, fitters-23.9%). It was found that patients with vibration disease showed changes of neurohumoral regulation characterized by an increased urinary excretion of adrenalin, noradrenalin and products of their metabolism (vanillyl-mandelic acid, metanephrin and urinary excretion of aldosterone and reduced level of plasma bradikininogen. The degree of the above changes depended on the severity of vibration disease and characteristics of its course. References 11 (Russian).

USSR

UDC 612.55:616-001.34

STATUS OF THERMOREGULATION IN VIBRATION DISEASE

Kiev VRACHEBNOYE DELO in Russian No 9, Sep 76 p 130

ABRAMOVICH-POLYAKOV, D. K., senior scientist, candidate of medical sciences, Khar'kov Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Text] [English language abstract supplied by author] The thermal topography and the responses of the organism to heat and cold loads were investigated in 46 metal cutters suffering from vibration diseases (stages I and II). The patients showed generalized diverse changes of skin temperature level, "mosaic" thermal asymmetry, a tendency to isometry in the oral-caudal and proximal-distal directions, chaotic changes of body responses to heat and cold loads. This may be evaluated as a disintegration of the peripheral segmental and suprasegmental apparatus of thermoregulation, in particular, of the limbico-reticular-diencephalic complex. The above findings elucidate some aspects of the pathogenesis of vibration disease. The recommended complex examination of thermoregulation may prove of value in other types of occupational pathology. Tables 2; no references.

USSR

UDC 617.7-092:616.5-031:611.92)-073.97

ELECTRICALLY ACTIVE SPOTS ON FACIAL SKIN AND THEIR ASSOCIATION WITH OCULAR PATHOLOGY

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep/Oct 76 signed to press 4
Mar 76 pp 42-45

VODOVOZOV, A. M., professor, and SOKOLOV, V. P., Department of Eye Diseases,
Volgograd Medical Institute

[Text] [English language abstract supplied by authors] The authors carried out investigations into the static electric potential (EP) of the facial skin and detected about 50 electrically-active spots and zones, including 10 organospecific for the eye. As a rule, the latter lay near the orbital edge. The potentials' difference between active spots and the background reached 4-15 mV. Inflammatory processes in the eye, except for herpetic keratitis, are characterized by an elevated EP in most of the active spots, and degenerative processes and herpetic keratitis-by the fall of the EP. Normalization of the EP value in active spots organospecific for the eye coincided with clinical recovery. Figure 1; table 1; references 13 (Russian).

USSR

UDC 612.843.364-08

REFINED INDICES FOR A STANDARD OF EXAMINATION OF THE DARK ADAPTATION OF EXAMINEES BY A RAPID METHOD

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep/Oct 76 signed to press 6 Jan 76 pp 45-47

MARINCHEV, V. N., candidate of medical sciences, and YERMAKOVA, N. A., All-Union Scientific Research Institute of Eye Diseases, Ministry of Health USSR

[Abstract] Approximate determination of dark adaptation by a 3-minute rapid method has been carried out with the use of the Belostotskiy-Gofman, Soviet-made, adaptometer (ADM). The method involves determination of the time threshold for a test object of definite brightness after a 2-minute light preadaptation to levels of exposure of 312,625,1250 or 2500 asb. The authors have done 1600 dark adaptation measurements corresponding to these four given levels, and have plotted curves in terms of optical density against time, in seconds. They noted that the accuracy of Belostotskiy's method is improved when measurements are made up to optical density of 2.7, and up to a time of 5 minutes. In practice, preadaptation exposure of 2500 asb is recommended; 1250 asb should be used to check doubtful findings. Figure 1; table 1; no references.

USSR

UDC 616.282.3-008.1-057:621.375.826

FUNCTIONAL CONDITION OF THE VESTIBULAR ANALYZER IN PERSONS ENGAGED IN THE WORK WITH LASER UNITS

Moscow VESTNIK OTORINOLARINGOLOGII in Russian No 6, Nov/Dec 76 signed to press 15 Apr 76 pp 47-50

BABURINA, YE. B., and KOMAROVA, A. A., candidates of medical sciences, Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

[Text] [English language abstract supplied by authors] The paper treats of the materials of clinical and physiological studies of the functional condition of the auditory and the vestibular analyzer in a group of persons working with laser units. It was shown that with the preservation of the auditory function, the workers developed vestibular disturbances of both central and peripheral character. In the adequate control group such shifts were much less frequent and involved chiefly the peripheral portions of the vestibular analyzer. Functional disturbances in the activity of the vestibular apparatus were not infrequently accompanied by vegetative-vascular disturbances and asthenization of the workers with absence of any pathology of the critical organs-the eye and the skin. The action of dispersed and reflected laser radiation and of bright light flashes plays a decisive role in these disturbances; possible pathogenic mechanism of the detected disturbances are considered. Disturbances in the activity of the vestibular analyzer, just the same as the neurasthenic and the vegetative-vascular disturbances, are assessed as the earliest reactions of the human body to the action of laser radiation. It is suggested that these shifts occurring reflexly should be taken into consideration in standardization of admissible levels of laser radiation under industrial conditions. References 11 (Russian).

USSR

UDC 615.849.19.015.4: 612.825:612.822.3

EFFECTS OF HELIUM-NEON LASER RADIATION ON BIOELECTRICAL ACTIVITY OF THE SENSORY MOTOR AREA OF THE CORTEX OF A RABBIT'S BRAIN

Moscow VORPOSY KURORTOLOGII, FIZIOTERAPII, I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 5, 1976 signed to press 12 Nov 75 pp 64-66

KUTATELADZE, I. O., The Central Institute for Health Resort Treatment and Physical Therapy, USSR Ministry of Health, Moscow

[Abstract] The subjects of the experience were mature male rabbits, divided into two groups: 30 in a control group and 60 in the experimental group. The radiation source was a helium-neon constant beam laser with wave length of 632.8 nm and wave density of 15 mVt/cm². The control group was exposed

to incoherent monochromatic radiation by a polarized red light, while the test animals were radiated with a beamed monochromatic red light. Apparatuses used were of Japanese manufacture. Results indicated an acceleration of the fundamental waves in the EEG, so that the wave lengths of 300-500 mc disappeared. At the same time, waves of higher frequency underwent practically no changes. The increased frequential activity recorded by the EEG as a result of laser radiation lasted for 8-10 minutes after the cessation of radiation. Figures 2; references 8: 6 Russian, 2 Western.

Entomology

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

SOME FEATURES OF THE ECOLOGY OF BLOOD-SUCKING MOSQUITOES IN FOCI OF OMSK
HEMORRHAGIC FEVER, AND THEIR POSSIBLE ROLE IN THE CIRCULATION OF THE VIRUSES
OF THE TICK-BORNE ENCEPHALITIS COMPLEX

Novosibirsk TR. BIOL. IN-TA. SIB. OTD. AN SSSR [Proceedings of the Biology
Institute of the Siberian Department, USSR Academy of Sciences] in Russian
No 21, 1976 pp 137-143

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract
No 9.36.69 by P. Frumkin]

BOGDANOV, I. I., and VOLYNETS, L. V.

[Text] During 1968-1970 a study of blood-sucking mosquitoes was made at the hospital of the Biology Institute, located in typical forested steppe country in the village of Troitskoye, Karasukskiy Rayon, Novosibirskaya Oblast. Fourteen species of mosquitoes were registered. Of these, five stood out as the most numerous: *Monsonia richiardii* (63.4-97.0%, in birch-aspen groves), *Aedes flavescens* (in groves, 0.6-19.6%, on reedy floodplains, 5.2-29.4%), *A. cinereus* (in groves, 0.1-10.0%, on reedy floodplains, 0.0-70.0%, on lake mats, 2.0-9.8%), *Anopheles maculipennis* (in groves, 0.8-3.8%, on reedy floodplains, 0.9-4.6%), and *Culex modestus* (on reedy floodplains, 9.9-51.0%, on lake mats, 83.5-98.0%). The figures here represent percents of species make-up for various years. Virological and serological data on the species *M. richiardii*, *C. modestus* and *A. cinereus* sufficed to establish contact with the virus of Omsk hemorrhagic fever. For *C. modestus* and *M. richiardii* there were observed at least 3 generations per season; for *A. cinereus* and *A. flavescens*, 1-2 generations. *C. modestus* showed a strong preference for feeding on birds; *A. flavescens* on man; *A. cinereus* on small mammals; while *M. richiardii* is strongly "omnivorous." 5 biblio.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

BLOOD-SUCKING MOSQUITOES

Vladivostok PRIRODNOOCHAGOVYYE BOLEZNI V PRIMORSKOM KRAYE [Natural Disease Foci in the Primorskiy Kray. A Collection] in Russian 1975 pp 213-229

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 10, 1976 Abstract No 10.36.54 by the author]

SHESTAKOV, V. I.

[Text] Data on the fauna and on the biology of blood-sucking insects are given, mainly for the southern part of Primorskiy Kray. Three ecological complexes for these insects are distinguished, with indication of the per- centual relation of the main species and the subordinate ones. A classifi- cation and description of the principal water basins (the main breeding areas of mosquitoes) are given. The ties between water phases of the insects and particular types of basins are explained. The phenology and variation in numbers of mosquitoes with respect to season are examined. A study is made of the developmental cycles of the pupae and larvae of individual species, and also of the wintering habits of adults. The accompanying map shows the distribution of the ecological complex of mos- quitoes of Primorskiy Kray. 24 biblio.

Environmental and Ecological Problems

USSR

UDC 616.131-008.331.1-02:612.223.2)-072

CLINICAL AND INSTRUMENTAL CHARACTERISTICS OF PRIMARY HIGH ALTITUDE PULMONARY ARTERIAL HYPERTENSION

Moscow KARDIOLOGIYA in Russian Vol 16 No 10, Oct 76 signed to press 18 May 76 pp 56-61

MIRRAKHIMOV, M. M., RUDENKO, R. I., MURATALIEV, T. M., and KHAMZAMULIN, R. O., First Department of Faculty Therapy, Kirgiz Medical Institute, Frunze

[Text] [English language abstract supplied by authors] The clinical pattern of primary high altitude pulmonary arterial hypertension observed in permanent residents of mountain regions is described. The diagnostic value of some non-invasive instrumental methods in primary high altitude pulmonary artery hypertension is analyzed: electro- and vectorcardiography, rheopulmonography, and indirect pulmonary artery pressure determination. It is suggested to distinguish the labile, stable and decompensated forms of the disease on the basis of its clinical and functional peculiarities. The criterion for the initial two forms consists in the persistence of the pulmonary artery pressure elevation, while the latter form is established when the high altitude cor pulmonale gets decompensated. Functional vasoconstriction of the pulmonary resistive vessels was shown to play an important role in the genesis of the disease: the administration of 0.5 mg of nitroglycerine and a 5-minute oxygen inhalation caused a positive dynamics in the indices of the pulmonary rheogram and a reduction of the pulmonary artery pressure, which, however, did not reach the level for inhabitants on the plain. Figures 2; tables 3; references 20: 7 Russian, 13 Western.

USSR

UDC 613.68-07:612.13

STATE OF THE CIRCULATORY SYSTEM IN SAILORS AS AN INDEX OF ADAPTATION TO LONG-TERM CRUISES

Moscow KARDIOLOGIYA in Russian Vol 16 No 9, Sep 76 signed to press 19 Jan 76 pp 50-56

MATSEVICH, L. M., POROSHENKO, A. S., and VINNIKOVA, V. N., Scientific Research Institute of Hygiene of Water Transport, USSR Ministry of Health, Moscow

[Text] [English language abstract supplied by authors] The peculiarities of the circulatory functions were examined in sailors following nautical voyages of varying duration and directly on board during a 6-month cruise. Over 1200 persons were subjected to the examination. The overall morbidity was analyzed in a contingent of about 6000 persons. The whole material was

statistically processed. The sailors were found to develop hypotensive reactions during the voyage that persisted following its termination. Cruises lasting over 2-3 months cause a significant tension of the adaptation mechanisms in the sailors, thus favoring the formation of persistent hypotensive states, inadequate reactions of the arterial pressure and heart rate, ECG changes that reflect the impairment of the functional state of the myocardium, etc. A lack of adaptation to cruises exceeding 2-3 months was established. The functional state of the cardiovascular system of sailors is considered to be one of the leading criteria for substantiating physiologically permissible duration of cruises. Tables 2; references 35 (Russian).

USSR

UDC 616.131-008.331.1+616.153.962.4-092:612.275.1

PULMONARY HYPERTENSION AND FIBRINOLYSIS AT HIGH ALTITUDE

Moscow KARDIOLOGIYA in Russian Vol 16 No 9, Sep 76 signed to press 19 Jan 76 pp 46-50

BOBOKHODZHAYEV, M. KH., and CHERNAYA, F. A., Department of Hospital Therapy No 1 of the Therapeutic Faculty, Tadzhik Medical Institute

[Text] [English language abstract supplied by authors] The fibrinolytic system of the blood was studied in 49 indigenous residents at an altitude of 3600 m above sea level who had signs of altitude pulmonary hypertension, and in 48 persons without such signs. The control group comprised 70 residents of Dushanbe (810 m above sea level). Persons with altitude pulmonary hypertension were found to have an increased fibrinolytic activity, a reduced content of antiplasmins and inhibitors of plasminogen activation. These changes are combined with a reduction of the fibrinogen content and a decrease in the activity of the fibrin-stabilizing factor. No principal difference was found in the fibrinolytic system of comparable groups having signs of altitude pulmonary hypertension or without such signs. Tables 2; references 18: 10 Russian, 8 Western.

USSR

UDC 612.014+613.3+576.75(575.4)

PHYSIOLOGICAL AND HYGIENIC CHARACTERISTICS OF THE WORK AND CONDITION OF STUDENT CONSTRUCTION WORKERS IN THE HOT CLIMATE OF TURKMENISTAN

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 1, 1976 pp 31-32

EYYAM-BERDIYEV, A. K., LABUNSKIY, V. V., ANNANEPESOV, KH. N., EYYAM-BERDIYEVA, T. S., ANIKEYEVA, L. A., and KURBANNAZAROV, P. M., Kharkov Medical Institute Turkmen Republic Staff of Student Construction Teams, and Mari Central Rayon Hospital

[Abstract] Cardiovascular function, peripheral blood, general immunobiological activity (nonspecific resistance), and hand strength were determined in 39 members of a student construction team (men up to age 26 years) before and after working for the summer in Mari Oblast, an area characterized by high ambient temperatures (up to 43° C in July and 47° C in August), relatively low humidity (from 48 to 72%) and high rate of air movement (up to 9 m/sec). No significant changes were found in the students' cardiovascular system, peripheral blood (RBC, hemoglobin, etc.), physical strength (as measured by manual dynamometry) after their summer work. Only a few showed a slight decrease in general immunological reactivity (as determined by V. I. Ioffe's test) apparently due to the abruptness of readaptation in individuals who had not adjusted to local conditions.

USSR

UDC 911.3:/616-02:613.12/911.3:616-02:613.11/

ELECTROCARDIOGRAPHIC STUDY OF MIGRANTS FROM LOW UPLANDS TO HIGHLANDS AND TO HOT CLIMATES

Alma-Ata PROBL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 256-258

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.44 by K. Murav'yeva]

ASKAROVA, E. ZH. and BAZHENOVA, T. V.

[Text] A study was made of electrocardiographic data obtained for a group of adults in the 20- to 30-year age group. These were inhabitants of a piedmont district (Iliysk), whose itinerary during one summer season followed the pattern piedmont-highlands-piedmont. In most cases studied, with transfer from piedmont to highlands, there appeared heightened P, K and T waves, and also a significant increase in the systolic index. Return to the piedmont brought wave inversion, an improvement in heart contractions and an increase in systolic index. Shift from the piedmont to the valley

conditions of a hot climate did not produce any marked changes, and nearly all the wave inversions which appeared in the piedmont were preserved. Return to the piedmont now produced only insignificant changes in EKG parameters.

USSR

UDC 911.3:/616-02:613.12/911.3:616-02:613.11/

SOME METHODOLOGICAL ASPECTS OF HUMAN ACCLIMATIZATION TO CONDITIONS OF HIGH ENVIRONMENTAL TEMPERATURES

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 233-235

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.41 by K. Murav'yeva]

ALFIMOV, N. N., and BELOUSOV, V. V.

[Text] Preventive measures in the area of high-temperature acclimatization are aimed at 1) artificial optimization of physical conditions of the living area, conditions of body-environment contact, and conditions of work, rest, eating and drinking; and 2) artificial adaptation to high environmental temperatures. One new aspect of the problem of optimizing the conditions of body-environment contact is the question of designing the hygienically most effective form of dress. Particular attention must be given to the quality of any sort of synthetic fiber, in view of the fact that a number of observers report that an increased degree of electrifiability in such fiber may react to the detriment of the human body. The effects of electrified fabrics on the thermoregulatory processes of the body must be studied. [Leningrad Military Medical Academy imeni S. M. Kirov].

USSR

UDC 911.3:(616-02:613.6.8)911.3:
(616-02:613.16)

EXPERIENCE IN THE USE OF THE INFORMATION-PROBABILITY METHOD IN ORDER TO EVALUATE NUTRITIONAL SHIFTS TAKING PLACE IN A HOT CLIMATE

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5. [Problems of Ecology and Medical Geography in Kazakhstan. No. 5. A Collection] in Russian 1976 pp 237-239

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.29 by P. Frumkin]

ALFIMOV, N. N., MAKHNENKO, A. A., BELOUSOV, V. V., and KHUTORETSKIY, M. M.

[Text] Two 7-member groups of healthy young people were studied, all of whom had been on the same diet and were living in a hot climate (mean daily air temperature 33°C, relative air humidity 72%). The first group consisted of persons with a lowered level of motor activity, who were employed in quarters without air conditioning; the second consisted of persons engaged mainly in physical labor in the open air. The study was conducted before and after a stay of 70 days in the conditions described. The nutritional state of the testees was evaluated with use of the method of N. N. ALFIMOV. To arrive at appropriate indices in this connection, the investigators measured body weight, thickness of the integument, daily urinary excretion of total nitrogen and amino nitrogen, and daily excretion of creatinine and vitamins B₁, B₂ and C; also, the content of C, Na, Ca, Mg and Cl, in both the urine and the blood plasma. As a quality index was taken the ratio of the factual quantity (ϕ) to a certain index assumed as the norm (H). Then,

$$\Pi = \phi/H \text{ when } \phi > H, \text{ or}$$

$$\Pi = 1 + (1 - \phi H^{-1}) \text{ when } \phi < H.$$

Following the formula

$$X = 34.65 \left[\left(\sum_{i=1}^n \log_n \Pi^{-1} - M \right) - (n-2) \right] (J_{\phi} - J_n), \text{ where}$$

n is the total number of indices, Π is the quality index, M is the largest term from the sum

$$\sum_{i=1}^n \log_n \Pi^{-1}; J_{\phi} = n^{-1} \sum_{i=1}^n \log_n (n/\Pi)^{-1};$$

and $J_n = \log_n$, both e^{-x} and e^x are determined. From a table e^{-x} is then read off (the probability of remaining in health, P), and from e^x is determined the multiplicity factor for increase in morbidity in the group under study, for the given indices of the nutritional state. The amount of stress on the reserve powers of the organism (S) is determined from the

formula

$$S = (1-P)P^{-1}.$$

According to calculations made, the first group showed a significant decrease in the probability of continuing in health (from 0.55 down to 0.22); and also an increase in the multiplicity factor for increased morbidity (from 1.8 up to 4.0); it also showed a significant increase in stress on the reserve powers of the organism (from 0.82 up to 3.54). In the second group, by contrast, all of these parameters varied only insignificantly. Although the two groups received identical rations, shifts in the nutritional state were more marked in persons of the first group than in those of the second. [Leningrad Military Medical Academy imeni S. M. Kirov].

USSR

UDC 911.3:/616-02:613.12/911.3:616-02:613.11/

DISADAPTATION STATES IN HUMAN SUBJECTS LIVING AT LOW LATITUDES OR AT THE EQUATOR

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 244-246

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.45 by K. M.]

STRAKHOV, A. P.

[Text] Data are given on the subjective sensations of persons living in the tropics or at the equator for a 5-year observation period. Varied and relatively frequent reactions to weather conditions are found in all age and professional groups, while the highest percent of meteotropic reactions is characteristic of persons with higher tonus of the vegetative nervous system.

USSR

UDC 911.3:/616-02:613.12/911.3:616-02:613.11/

IMMUNOALLERGIC REACTIONS DURING THE PERIOD OF ADAPTATION OF THE ORGANISM TO
NEW GEOGRAPHICAL CONDITIONS

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of
Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in
Russian 1976 pp 246-248

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract
No 9.36.46 by K. M.]

NIKOLAYEVSKIY, V. V.

[Text] A study was made of the adaptation of the immunological systems of 200 persons arriving in Western Siberia from various parts of the country. Definite immunological shifts appeared during the first two months of their visit--a drop in general immunological reactivity, a high allergic response to common microflora, and reduced activity of the factors of nonspecific immunity.

USSR

UDC 911.3:/616-02:613.12/911.3:616-02:613.11/

CONTENT OF LACTIC ACID DURING ADAPTATION TO MEDIUM ALTITUDES FOLLOWING
MUSCULAR LOADING, AMONG PERSONS WITH VARYING DEGREES OF TRAINING

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTAN. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 240-242

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract
No 9.36.48 by K. M.]

AVAZBAKIYEVA, M. F. and CHARYYEVA, A. A.

[Text] A study was made of the content of lactic acid in the blood in connection with the degree of athletic training of the body at altitudes of 840 and 1,800 m above sea level. A difference in the process of build-up of the acid was revealed: the greater the degree of physical training, the less the accumulation. At an altitude of 1,800 m, the period of acute adaptation sets in after 5 or 6 days, but the content of lactic acid in the blood is less than among untrained persons.

USSR

UDC 911.3:/616-02:613.12/
911.3:616-02:613.11/

STATE OF PROTEIN METABOLISM IN PERSONS LIVING IN DIFFERENT ZONES

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 235-237

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.47 by K. Murav'yeva]

PADKIN, V. V. and MAKHnenko, A. A.

[Text] Fourteen healthy young men were studied to determine the effect of climate on protein metabolism; these received exactly the same diet, and were engaged in the same (intellectual) form of work. One-half of the group, however, worked in favorable climatic conditions; and one-half in the presence of heightened air temperature and intense radiant heat. The research was conducted in three different climatic zones--temperate, subtropical and frigid. Following a stay in the subtropical zone, excretion of total nitrogen of the members of the two different groups dropped by 11% (in comparison with the initial values); but in the case of the frigid zone, it increased by 16%, shifts in the second group being more pronounced. Creatinine excretion following a stay in the subtropical zone increased in the case of the first group by 22.3%, and in the case of the second group diminished by 10.3%. In the frigid zone all persons showed only an insignificant increase in creatinine secretion.

Epidemiology

GDR/USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

PRESENT INCIDENCE OF LEPTOSPIROSIS IN THE GERMAN DEMOCRATIC REPUBLIC

Z. GESAMTE HYG. [Journal of Total Hygiene] in German 22 No 1, 1976 pp 71-73

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No. 9.36.79 by L. Saravayskaya]

HERGT, RITA

[Text] During the period 1970-1974, infections by several species of *Leptospira* were recorded in the German Democratic Republic: *Leptospira grippotyphosa*, *L. icterohaemorrhagiae*, *L. tarassovi*, *L. pomona*, *L. bataviae*, *L. sejroe* and *L. bratislava*. In 1970, *L. grippotyphosa* was the causative agent in 8 cases, *L. icterohaemorrhagiae* in 7, and *L. tarassovi* in 4; in 1971, the corresponding figures were 47, 25 and 14, in 1972, 26, 23 and 27, in 1973, 9, 13 and 10, and in 1974, 40, 19 and 10. In 1974, in addition, there were individual cases produced by *L. pomona*, *L. bataviae*, *L. sejroe* and *L. bratislava*. Throughout the period, men suffered more from leptospirosis than did women, as a result of their professional specialization (tractor operators, sewage workers, butchers). Among males, 106 cases due to *grippotyphosa* were observed, as against only 24 for the opposite sex; while *icterohaemorrhagiae* and *tarassovi* accounted for 73 and 24, and 53 and 12, cases, respectively. Weil's disease and swamp fever are observed in the 11- to 40-age group, and morbidity in the 11-to 20-age group is due to transmission of the infection through water (by bathing in reservoirs). *L. tarassovi* is most frequently recorded for the 21-40 age group; *L. grippotyphosa*, for agricultural workers (herders, excavator operators, foresters, veterinaries, tractor operators, gardeners, milkers, improvement workers and the like. The basic source of infection in the case of Weil's disease is the rat, and some other professions are therefore also liable, such as workers in fish combines, zoos, and the like, where contact with this animal is likely. *L. tarassovi* is observed mainly among butchers, cooks and slaughter house workers. Sources of infection involving *L. pomona*, *L. sejroe*, *L. bratislava* and *L. bataviae* are now under investigation. 16 biblio.

USSR

UDC 911.3:61

USE OF THE METHODS OF THEMATIC CARTOGRAPHY IN NOSOGEOGRAPHY

Moscow VOPR. MED. GEOGR. [Problems of Medical Geography. A Collection] in Russian 1976 pp 17-20

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.4 by L. Saravayskaya]

DARCHENKOVA, N. N.

[Text] Several different means of cartographic representation are employed in the compilation of nosogeographic charts, as follows: 1) symbolic means, which a) show the number of cases of illnesses by populated point, b) indicate the relative frequency of recorded groups of diseases (as, for example, the helminthiases), and c) show the points of discovery of the causative agent, the species identification, the points of capture and breeding of the causative agent, the number of carriers, and so forth; symbolic means are employed mainly in preparing cadaster nosocharts; 2) the areal method, employed for representation of regions of dissemination, the carrier, the intermediate host, and various phenomena of interest in nosogeography, such as territories of irrigation agriculture and the breeding places of malarial mosquitoes; this method is widely used for charts showing the geographic distribution of elements favoring the rise of certain diseases, and also for charts illustrating prophylactic and control measures; 3) movement lines are used to show the geographical shifting of infections, and are also used on charts indicating the dissemination routes of diseases and the influx of infections, as well as on historical nosocharts; 4) the method of isolines is used to represent those natural factors serving as predisposing factors for the dissemination of diseases; 5) localized diagrams serve only occasional purposes in the compilation of nosocharts, being mainly employed to illustrate natural phenomena favoring the discovery of medicogeographical patterns; 6) the method of qualitative background is the basic means of compiling nosographic zoning charts, and also of showing the structure of nosareals; and, finally; 7) the chart-diagram, which is used for visual comparison of the number of recorded cases of one or several diseases by geographical region for a year or series of years, in reference to a certain base year; the chart-diagram serves to represent the territorial distribution of population morbidity, mortality and degree of variation in time and space.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

THE PLAGUE DURING 1974

KHRONIKA VOZ [Chronicle of the World Health Organization] in Russian 30
No 4, 208, 1976

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract
No 9.36.82 by V. Kraminskiy]

[Unsigned]

[Text] There were 2,654 plague cases registered in 1974, 155 of which ended fatally (790 and 47, respectively, in 1973). Of these, 1,552 were detected in South Vietnam (69%), being distributed in 23 of that country's 46 provinces. The greatest number (500) was found in the city of Kuangnam. Danang had 117 cases. It is not clear whether the disease has actually been on the rise in South Vietnam; the apparent increase may be due to improved methods of observation and recording. The latter possibility is supported by the fact that the number of cases confirmed in the laboratory increased from 41 in 1973 to 250 in 1974. In Burma, in 1974, 699 cases of plague were recorded (18 deaths), as against only 17 cases and 3 deaths in 1973. In the Taunji district (state of Shan), there were 668 cases and 17 deaths from October to December, 1974. In Africa, in the same year, there were 20 recorded cases in Zair, 39 in the Malagasy Republic, 23 in South Rhodesia and 102 in Nambia. The latter flare-up was associated with forest fires caused by the migration of rodents. Of 321 cases of plague in the Americas in 1974, 296 appeared in Brazil, 8 in Peru, 14 in Bolivia, and 8 in the United States. As a rule the appearance of plague in the human population is the result of epizootics among rodents. 2 Biblio.

USSR

UDC 911.3/616-02:613.2/911.3:/616-02:613.8/

EPIDEMIOLOGY OF TYPHO-PARATYPHOID INFECTIONS IN THE KARAKALPAK ASSR

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan No 5. A Collection] in Russian 1976 pp 72-74

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.132 by M. Stradomskaya]

ALDABERGENOV, S. A.

[Text] Intensity indices for morbidity with typho-paratyphoid infections in the Karakalpak SSR are double the mean values for Uzbekistan as a whole.

Given here are the materials of a study of the annual monthly dynamics and age distribution for typho-paratyphoid infections during the period 1964-1973 for the Karakalpak ASSR. Typhus abdominalis showed a rise in 1965, 1969, 1970 and 1973; paratyphoid from 1968 through 1970. Study of the dynamics of morbidity justifies assigning the well-known periodicity to the epidemiological process and to the drop-off which comes every 3-4 years. High morbidity indices for typhus abdominalis are found in Nukus, and, since 1968, in Takhtakupyrskiy, Kegeyliyskiy and Chimbayskiy rayons. Paratyphoid B has increased over the republic since 1968. A rise in incidence is observed in three rayons, the populations of all of which have been using water from the Kyz-Ketlan Canal, already contaminated by inflow from Nukus. In the southern rayons of the republic, the rise in this disease is due to the March flooding of the Amu-Dar'ya, which sharply worsens the sanitary condition of nearby populated points, and hastens the migration of the population into Turtkul'skiy and Amudar'yinskiy rayons. The appearance of the epidemic process has been favored by this active migration and by the presence of a large number of bacteria-bearers of typho-paratyphoid infection among the population of the city of Biruni (in 1969 there were 21 known carriers). In this situation, in addition to the factor of water, a leading role has been played by infection resulting from ordinary domestic contact. Among sufferers from these infections, 50% in Turtkul', 52% in Biruni and 60% in Amudar'inskiy Rayon are persons in the older age brackets. Typho-paratyphus infections account for 91.2% of illnesses during the May-November period. Infection is spread mainly through the medium of water. A high rate of infection is observed among children, particularly those in the 7-14-year age group, which comprises 31.4% of patients.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

ZONING OF THE PLAGUE-ENZOOTIC NORTHEASTERN CASPIAN TERRITORY, AND SELECTION OF APPROPRIATE PROPHYLACTIC MEASURES

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography of Kazakhstan No 5 A Collection] in Russian 1976 pp 116-119

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.85 by Yu. Dubrovskiy]

YERMILOV, A. P.

[Text] As regards the danger of epidemics, the area of the northeast Caspian can be divided into 3 groups of regions, with allowance for epizootological and social features, as follows: 1. Regions of plague epidemics, located between the Urals and the Emba, and south of the Emba, where, in some places of natural persistence of plague foci, the threat of infection of human beings remains constant; the most dangerous regions are the valley of the Ural River,

the northern part of the coastal plains, and the lowlands of the Emba River; 2. Regions with a low degree of epidemicity that is, regions with temporary appearance of epizootic activity of the plague. These are found in the cis-Ural clay-soil valleys, the southern part of the coastal valleys, and the trans-Emba valley-depression area; and 3. Regions which are not plague-epidemic, and epizooties of this disease are very rare (valleys in the lowlands of the Sagiz, and the Emba Plateau).

USSR

UDC 911.3:616.9/98

DYNAMICS OF INFLUENZA EPIDEMICS IN THE USSR

Leningrad EPIDEMIOL. I PROFILAKTIKA GRIPPA V SOTS. STRANAKH [Epidemiology and Prophylaxis of Influenza in the Socialist Countries. A Collection] in Russian 1975 pp 112-118 and 177-178

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 10, 1976 Abstract No 10.36.194 by Ya. Tsilinskiy]

MARINICH, I. G., IVANNIKOV, YU. G., and KONDRAT'YEV, V. A.

[Text] Based on their developmental character, course and extinction, the influenza epidemics observed in Leningrad since 1953 can be categorized in four types: 1) epidemics produced by new antigenic variants of the group A influenza virus (1957, 1965, 1969 and 1972); these were characterized by a vigorous upswing in morbidity, which reached a maximum of 16.2-22.8 per 100 persons, by rapid movement of the peak, which had a high maximum, by high infectivity of all age groups, and by short duration; 2) repetitive epidemics from type A influenza virus (1953, 1956, 1961 and 1971); these, as distinct from type 1, showed a slower rate of development of the epidemic process, and also a different distribution of the age structure of morbidity, owing to lower infectivity of the adult population and of children in the 3-14 age group; here morbidity varied from 4.7 to 12.6 per 100 persons; 3) epidemics from type B influenza virus (1955, 1963, 1966 and 1972); the distinguishing feature of this group of epidemics was their selective infectivity as regards the 3-14 age group; overall morbidity varied from 1.2 to 7.2 persons per 100; and 4) epidemics of mixed etiology produced by the type A and type B viruses (1959, 1962, 1967 and 1970); these, as regards infectivity (morbidity was 10.1-22.9 per 100), were comparable to epidemics of type 1, with this difference: the most affected group was that of children from 3 to 14 years of age. It may be said that, on the whole, influenza morbidity has preserved its continuity in time, and that epidemic episodes have been observed against a background of constant sporadic morbidity from respiratory infections.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

QUESTION OF PATTERNS OF EXISTENCE OF PLAGUE MICROBES IN INTEREPIZOOTIC PERIODS (A SURVEY)

Saratov PROBL. OSOBO OPASN. INFECTSIY. VYP. 2(48) [Problems of Especially Dangerous Infections. No 2(48). A Collection] in Russian 1975 pp 5-9

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 10, 1976 Abstract No 10.36.93 by the Author]

KONDRASHKINA, K. I., YERMILOV, A. P., VELICHKO, L. N., and LUK'YANOVA, A. D.

[Text] On the basis of microfocal outbreaks of plague during interepizootic periods, the authors examine the phenomena of prolonged preservation of the microbe in the bodies of fleas and cattle ticks; and also prolonged forms of the infection in rodents and variability in excitants of the infection. However, such inhibitory factors cannot be an explanation of the duration of epizootic periods, which may extend over dozens of years. 27 biblio.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

TSUTSUGAMUSHI FEVER

Vladivostok PRIRODNOOCHAGOVYYE BOLEZNI V PRIMORSKOM KRAYE [Natural Disease Foci in the Primorskiy Kray. A Collection] in Russian 1975 pp 102-118

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 10, 1976 Abstract No 10.36.90 by the Author]

SOMOV, G. P., and SHUBIN, F. N.

[Text] The areal of tsutsugamushi fever in the Soviet Far East embraces all of the southern part of Primorskiy Kray, South Sakhalin, and the island of Shikotan. However, as the disease moves from south to north, and from the Pacific coast into the depth of the continent, the number of highly virulent strains of Rickettsia tsutsugamushi diminishes. Strains now circulating in the Far East belong to three serotypes: Carp, Cato and Gilliam. The natural carriage of rickettsiae has been established for six species of larval chiggers. Clinically, the tsutsugamushi fever as found in the Far East, proceeds with fever, lymphadenitis and primary affect. The collection includes a chart showing the distribution of the disease in the Soviet Far East. 27 biblio.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

TICK-BORNE RICKETTSIOSIS IN NORTHERN ASIA

Vladivostok PRIRODNOOCHAGOVYYE BOLEZNI V PRIMORSKOM KRAYE [Natural Disease Foci in the Primorskiy Kray. A Collection] in Russian 1975 pp 83-101

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 10, 1976 Abstract No 10.36.89 by the Author]

SOMOV, G. P.

[Text] The results of 10 years of microbiological, serological, tick-epidemiological and zoologoparasitological research on tick-borne rickettsiosis in the Primorskiy Kray are given. Strains of *Dermacentrozenus sibiricus*, which circulate in this region, by their biological, antigenic and immunogenic properties, belong to a special geographical variant, and this fact is reflected in the clinical distinctness of the form of rickettsiosis found in Primorskiy Kray. The areal of the infection in this region includes a significant portion of the Kray; the infection is distributed "mosaically," in the form of individual microfoci. A new carrier species has been identified--namely, *Haemaphysalis japonica douglasi*. An experiment on wild rodents has shown their high sensitivity to this causative agent of rickettsiosis (the rodents were the Far-Eastern and red-gray voles, and the rat-hamster.) Two charts in the collection show the distribution of the disease in Primorskiy Kray. 27 biblio.

USSR

UDC 911.3:/616-02:591.145.2 + 632.523/
911.3:/616.9-036.21/22/

JAPANESE ENCEPHALITIS

Vladivostok PRIRODNOOCHAGOVYYE BOLEZNI V PRIMORSKOM KRAYE [Natural Disease Foci in the Primorskiy Kray. A Collection] in Russian 1975 pp 44-63

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 10, 1976 Abstract No 10.36.73 by the author]

POLENOVA, I. N., and SHESTAKOV, V. I.

[Text] Materials of a survey of the literature and fundamental research dealing with Japanese encephalitis both in the Soviet Union and abroad are given. The only focus of this disease found in the Soviet Union--that in the southern Primorskiy Kray--is described; here, despite the absence of Japanese encephalitis during certain years, there has been a continuous circulation of the virus. This has been confirmed by the results of virological study of blood serums of both man and animals, and also by the discovery

of the virus of Japanese encephalitis in the brain of birds living within the focus area in question. Data from the study of fauna and the ecology of mosquito-carriers of the disease, and methods of nonspecific prophylaxis, are given. 39 biblio.

USSR

UDC 595.421:591.522

REGIONALIZATION OF THE AREA OF PROPAGATION OF THE TAIGA TICK (*IXODES PERSULCATUS*)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 55 No 10, Oct 76 pp 1468-1475

KORENBERG, E. I., and LEBEDEVA, N. N., Laboratory of Medical Zoology, Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR, Moscow

[Abstract] The primary unit of regionalization of an area of propagation is the regional complex of populations. A regionalization of the area of propagation of *I. persulcatus* based on population principles is suggested, in accordance with which some 59 regional population complexes are distinguished. Possible indicators of abundance and type of seasonal activity of mature *I. persulcatus* are presented, characteristic for each regional complex of populations, and their boundaries are described. A map accompanies this report. Figure 1; table 1; references 27 (Russian).

USSR

FISH VISION AND LIGHT UNDER WATER

Moscow OKEANOLOGIYA in Russian Vol 16 No 5, 1976 pp 915-916

GOVARDOVSKIY, V. I., Laboratory of Evolutionary Morphology, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

[Text] [English language abstract supplied by author] A critical review is given of the existing concept that the visual pigments of fishes are adapted to the spectral composition of underwater illumination so that maximum light absorption can be provided (the so-called "sensitivity hypothesis"). It is shown that the conformity of the visual pigment to the requirements of the "sensitivity hypothesis" would simultaneously provide the maximum visibility range in the turbid environment. However the absorption maxima of the real visual pigments, as a rule, are shifted considerably towards shorter wave lengths compared to the values required by the "sensitivity hypothesis." The actual position of the absorption maximum is assumed to be determined by a compromise between the necessity of attaining high sensitivity and spontaneous heat decomposition of the visual pigment, the rate of which increases sharply as absorption is shifted to the red region. The acceptance of this point of view makes it possible to explain the "blue" shift in the visual pigments of deepsea fishes and the moderate "red" shift in the fishes inhabiting turbid surface water. References 16: 4 Russian, 12 Western.

Immunology

POLAND

BOTULINUM ANTITOXINS AND ANTIBACTERIAL IgM and IgG ANTIBODIES IN SERA OF PERSONS IMMUNIZED WITH BOTULIN POLYTOXOID COMBINED WITH CHOLERA VACCINE
II. RESPONSE TO CHOLERA VACCINE

Warsaw ARCHIVUM IMMUNOLOGIAE ET THERAPIAE EXPERIMENTALIS in English Vol 24 No 5, 1976 signed to press Jan 76 pp 641-654

GALAZKA, A., RYMKIEWICA, D., and ALEKSANDROWICA, Department of Vaccine and Serum Control, State Institute of Hygiene, Warsaw

[Text] [English language abstract supplied by authors] The response of humans to cholera vaccine was very heterogeneous. The proportion of IgC vibriocidal antibodies was high in persons having previous natural or artificial contact with *V. cholerae* antigens. Predominance of IgM antibody response was seen in persons vaccinated for the first time. This type of response was sometimes evoked by unspecific stimuli such as botulinum polytoxoid without cholera vaccine. Antibodies passively protecting mice were found both in IgM and IgC globulins but the activity of these antibodies was higher in IgC than in IgM globulins. Figures 9; tables 2; references 61: 4 Polish, 2 Romanian, 56 Western.

POLAND

BOTULINUM ANTITOXINS AND ANTIBACTERIAL IgM AND IgC ANTIBODIES IN SERA OF PERSONS IMMUNIZED WITH BOTULINUM POLYTOXOID COMBINED WITH CHOLERA VACCINES.
I. RESPONSE TO BOTULINUM TOXOID

Warsaw ARCHIVUM IMMUNOLOGIAE ET THERAPIAE EXPERIMENTALIS in English Vol 24 No 5, 1976 signed to press Jan 76 pp 631-639

GALAZKA, A., RYMKIEWICA, D., and ALEKSANDROWICZ, J., Department of Vaccine and Serum Control, Institute of Hygiene, Warsaw

[Text] [English language abstract supplied by authors] Two groups of subjects were immunized with combined vaccine containing aluminum hydroxide-adsorbed botulinum toxoids, types A, B and E, and 4 mld of formaldehyde-inactivated *V. cholerae* Inaba and Ogawa organisms. The first group included laboratory workers who were previously immunized against cholera and had professional contact with botulinum toxins and viable *V. cholerae* organisms. The second group included young men who were never vaccinated against botulism or cholera. The three-dose immunization schedule with combined vaccine resulted in clear-cut antitoxin response; after the third dose, the A, B and E antitoxin level ranged from 0.2 to 10 IU/ml. Immunity against botulinum toxins lasted at least one year. Distribution of the antitoxins

among IgM and IgG globulin classes resembled that in the case of response to other toxoids; 21 days after the third immunization antitoxin activity was found in IgG globulins. Figures 3; tables 2; references 22: 8 Polish, 14 Western.

USSR

UDC 612.017.1:612.744

ANTIGENS OF SKELETAL MUSCLES JOINED WITH POLYURETHANE GLUE

Kiev UKRAINSKIY BIOKhimICHNIY ZHURNAL in Ukrainian Vol 48 No 5, 1976 signed to press 2 Apr 75 pp 568-571

SHCHUKINA, L. V., PKHAKADZE, G. A., and LIPATOVA, T. E., Institute of Chemistry of High Molecular Compounds, Academy of Sciences Ukr SSR, Kiev

[Text] [English language abstract supplied by authors] The reaction of anaphylaxia with desensibilization on guinea pigs and the method of double diffusion in agar gel were used to study the antigenic composition of the rat skeletal muscles 3, 7 and 30 days after their cross sections were connected with polyurethane glue and silk. It is shown that in the postoperative period, besides antigens similar to those of the normal muscles, other antigens which may belong to stage-specific ones appear in the fraction of soluble proteins. The antigenic composition of the skeletal muscles is the same with both methods of connection of the tissues defects. Figure 1; table 1; references 13: 10 Russian, 3 Western.

USSR

UDC 613.62:612.017.1

STATUS OF IMMUNOBIOLOGICAL REACTIVITY IN WORKERS AT THE DOLINSK GAS REFINING PLANT

Kiev VRACHEBNOYE DELO in Russian No 9, Sep 76 pp 133-136

VIDA, M. P., and SOKIRO, M. G., Dolinsk Rayon Sanitary-Epidemiological Station and Central Rayon Hospital

[Abstract] Immunobiological reactivity (IR) is seen as the general physiological reaction of the body in conformity with physiological laws and is an index of bodily resistance. Few reports are available in the literature on the effects of low concentrations of hydrocarbons on IR. This problem attracted the author's interest at Dolinsk where, in 1963, a gas refining plant was set up at an existing petroleum deposit. Thirty-five subjects--and 31 controls--about 40 years of age, who had worked up to 7 years at the plant were examined. Exposure to long-term action of hydrocarbons lowered the phagocytic activity of leukocytes, the phagocyte number and index; it accelerated the erythrocyte sedimentation rate and increased somewhat the blood leukocyte content. Table 1; references 7 (Russian).

Industrial Toxicology

USSR

UDC 614.777:[628.191:54]-074

CALCULATION METHODS FOR THE PROBLEM OF HYGIENIC STANDARDIZATION OF CHEMICAL WATER POLLUTANTS

Moscow GIGIYENA I SANITARIYA in Russian No 11, 1976 signed to press 28 Jan 76 pp 15-20

SHIGAN, S. A., candidate of medical sciences, Institute of General and Community Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] Since Soviet chemical industry synthesizes some 40,000 newly developed compounds, of which about 300 are in practical use and hence may constitute air and water pollutants, research in the area of maximal permissible concentrations (MPC) is of very great importance. Actually, Soviet scientific institutions designate only 20-30 MPC each year, and this effort does not measure up to industrial-environmental reality. One means of accelerating research in hygienic standardization is to employ computing methods for predicting the parameters of chronic toxicity of substances; and it is especially expedient to use such methods for determining MPC for toxic substances in reservoirs. The author proposes a set of equations which will cut down research time needed for determining norms by a factor of 10-15 in up to 50% of the new chemical substances. Calculation methods have the additional advantage of facilitating the planning of toxicological experiments, and may serve as the basis of expert evaluation of toxicity and of the danger of chemical contamination of water. A useful table giving maximal nonactive doses for chronic toxicity of 28 chemical substances accompanies the article. Tables 1; references 8: 7 Russian, 1 Western.

USSR

UDC 577.472

INFLUENCE OF THE TEMPERATURE MODE ON THE SENSITIVITY OF STURGEON FINGERLINGS TO PETROLEUM POISONING

Baku IZVESTIYA AKADEMII NAUK AZERBAYDZHANSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 1, 1976 pp 92-96

VELIKHANOV, E. YE.

[Abstract] The effects of thermal pollution have become increasingly clear in recent years, particularly for the southern regions of the USSR, where the water may already reach critical temperatures in the summer. The studies performed in association with this article indicated that a rise in temperature causes petroleum pollution to have a greater influence on the oxygen mode of the water, so that the combination of oil pollution and high water temperature is particularly deadly for fingerlings of a number of varieties of fish. Tables 7; references 5 (Russian).

USSR

UDC 614.7:648.1

CRITERIA AND METHODS OF HYGIENIC ASSESSMENT OF HOUSEHOLD CHEMICALS

Moscow GIGIYENA I SANITARIYA in Russian No 11, 1976 pp 44-47

MARKOVA, Z. S., SAUMIN, A. I., KOSTRODYMVA, G. M., PYLEV, Z. A., and SAMOKHVALOVA, V. I., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR

[Abstract] Adequate standardization of commercial household chemicals as regards hygienic safety is still in the somewhat distant future, owing to the complex composition, variety, and mere numbers of these substances, and to the possibility of the formation of new and possibly harmful chemical compounds, about which little or nothing can be predicted. The problem is an acute one, in view of the extensive contact which the general public has with these substances. In addition to application of the usual research methods, and intensification and coordination of research in this field, particular attention must be given to the possible consequences of steady use of these chemicals, including delayed reaction (blastogenic, gonadotropic, etc.) Some specific technical recommendations are made, such as the use of white rats, hamsters and mouse hybrids.

USSR

UDC 613.632.4-074:547.541.123:543.42

PHOTOMETRIC DETERMINATION OF THE CONTENT OF METHYLETHYLBENZENESULFONATE IN THE ATMOSPHERE OF INDUSTRIAL INSTALLATIONS

Moscow GIGIYENA I SANITARIYA in Russian No 11, 1976 pp 84-85

DOROGOVA, V. B., candidate of chemical sciences, Angara Scientific-Research Institute of Labor Hygiene and Occupational Diseases

[Abstract] Methylethylbenzenesulfonate (MEB) is an intermediate product in the production of Analgin. However, no method for determining its content in the air of industrial installations has so far been published. The author proposes the following: Through two absorbers with porous plastic which contain 5 ml of 2.5% alkali solution, air is passed at the rate of 0.5 l/min, and after 10 minutes the contents of the two absorbers are blended. To 2-ml samples in two colorimetric test tubes are then added 0.5 ml of H_2SO_4 (1:1) and 1 drop of 2% $KMnO_4$, and the tubes are agitated. Then a 30% solution of sodium sulfite is added, by drops, until the mixtures are decolorized followed by 2 ml chromotropic acid disodium salt. This is boiled and optical density determination on the FEK-N-56 colorimeter are taken. The determination of MEB air content involves a probable error of $\pm 7\%$, which is acceptable in terms of guarantee of hygienic safety.

USSR

UDC 614.777:628.35:625.142.215

HYGIENIC EFFECTIVENESS OF BIOLOGICAL DISINFECTION OF WASTE WATER FROM
CROSSTIE IMPREGNATION PLANTS

Moscow GIGIYENA I SANITARIYA in Russian No 11, 1976 signed to press 25 Nov
75 pp 40-44

BOGDANOV, M. V., First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] The basic technological process in use at crosstie impregnation plants (CIP) is the application of coal-tar and shale oils, which themselves are complex mixtures of various classes of substances. This means that the resulting waste water is extremely complex, and is sometimes of uncertain chemical composition. The formulation of safety measures to prevent significant biological damage from such waste water are correspondingly more difficult. Tests were run to determine the toxic effects of unpurified waste water, in several dilutions. Biologically purified waste water was also studied. White rats served as test animals. A broad selection of biochemical and physiological reactions was taken, with particular stress on general physiology, the sex organs, and the composition of the blood. Both types of water exerted serious damaging effects, though these were somewhat different in character. Based on the experimental data obtained, and also on the published results of previous investigators in this area, the author and his colleagues recommend that waste water from crosstie impregnation plants be subjected to not less than a 250-fold dilution with pure water. Tabulated data and bibliography accompany the paper. Tables 3; references 10: 8 Russian, 2 Western.

USSR

UDC 911.3:/616-02:613.6/9/

METHODS OF PREDICTING THE PARAMETERS OF THE CHRONIC TOXICITY OF SUBSTANCES
IN CONNECTION WITH WATER HYGIENE

Moscow MATERIALY 1-GO ITOG. SOV.-AMER. SIMPOZ. PO PROBL. 'GIGIYENA OKRU-ZHAYUSHCHEY SREDY' RIGA 1974 [Materials of the First Joint Soviet-American Symposium on Environmental Hygiene, Held at Riga in 1974. A Collection] in Russian 1975 pp 112-121

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.126 by L. Saravayskaya]

SHIGAN, S. A.

[Text] Each year the introduction of a very large number of new chemical compounds into industry and agriculture necessitates not only fixing their permissible content in the environment, but also devising rapid and effective means of justifying their hygienic norms. Data have been analyzed

which characterize the threshold and inactive levels of chronic toxicity of a combination of chemical substances and their individual groups--namely, the P- and Cl-organic compounds obtained upon their hygienic normalization in water; and for these, acute toxicity indices, as well as maximum permissible air concentrations in working quarters, and threshold and inactive concentrations of chronic toxicity for normalization in atmospheric air, have been determined. It is proposed that in predicting the parameters of chronic toxicity of substances, threshold and inactive levels of toxicity of Cl-organic compounds be determined from the magnitudes of their mean lethal doses, and that in the case of P-organic compounds the maximum permissible concentration for a working area be used for the same purpose. Given also is a methodological scheme of an express-experiment for predicting chronic toxicity parameters of substances.

USSR

UDC 628.1:614.777

HYGIENIC EVALUATION OF WATER AFTER SOIL PROCESSING WITH THE PESTICIDE
YALAN

Kiev VRACHEBNOYE DELO in Russian No 9, Sep 76 pp 136-137

KOSACHEVSKAYA, P. I., and BARAN, N. A., Department of Communal Hygiene, Kiev Institute for the Advanced Training of Physicians

[Abstract] Yalan (ordram, hydram) is S-ethyl-N₁ N-heptacyclohexamethylene thiocarbamate. The Soviet-manufactured product is a 60% concentrate emulsion, slightly soluble in water, a substance of average toxicity for man and warmblooded animals (LD₅₀ for rats is 584 mg/kg; for mice, 1200 mg/kg; it is of average toxicity for fish. Optimal dose on fields is 4-6 kg/hectare. The threshold organoleptic concentration in drinking water is 0.025 mg/l; it is relatively stable in water. At 0.025 mg/l in water reservoirs, it does not affect the auto-purification process; at 0.1 mg/l it substantially inhibits the biochemical oxygen requirement process (by 40% as compared to a control), and retards ammonia and nitrite oxidation. The acceptable value for the maximum permissible level of yalan in water is 0.025 mg/l. Use of yalan must assure that reservoirs do not get a runoff which will lead to exceeding the MPL. No references (Ye. A. Antonovich, 1957, is cited as author of related studies on human and animal toxicity).

Microbiology

USSR

UDC 613.2:576.851.49 (Salmonella)

SURVIVAL OF SALMONELLAES ISACHENKII IN FOOD PRODUCTS

Moscow VOPROSY PITANIYA in Russian No 5, Sep/Oct 76 signed to press 31 May 76 pp 65-67

OMEL'YANETS, T. G., All-Union Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev

[Abstract] An effective way to combat rodents, which destroy seeds and wreak financial loss on the economy, is the microbiological method: an epizootic is artificially induced among the rodents by application of harmful bacteria. Very wide use for this purpose is made of *S. isachenkii* (which is related to *S. enteritidis*--serogroup D). However, the persistence of these microorganisms, used in this method, in foods poses a problem: *S. isachenkii* can remain viable in foods, e. g., up to 5 days in milk, and over 20 days on meat products. This long survival period must be taken into consideration in programming hygienically-sound use of the microorganisms to combat their environmental spread with possible infectivity among humans. Figures 2; references 4: 4 Russian, 1 Western.

USSR

UDC 576.8.095.3:547.279.53

DEGRADATION OF HERBICIDE ALVISON-8 BY MICROORGANISMS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 5, Sep/Oct signed to press 22 Apr 76 pp 879-883

FINKEL'SHTEYN, Z. I., GOLOVLEVA, L. A., GOLOVLEV, YE. L., and SKRYABIN, G. K., Institute of Biochemistry and Physiology of Microorganisms

[Text] [English language abstract supplied by authors] Microbial degradation of a new herbicide, Alvison-8, was studied. No strains capable of growth at the account of this compound as a source of carbon have been found among microorganisms isolated from soil treated with the herbicide and among collection cultures. Some strains can degrade Alvison-8 at a concentration of 100-300 mg/litre in cooxidative conditions. Effective cosubstrates are such compounds which are actively metabolized by microorganisms but cannot maintain intensive growth. In some cases, the cultures grew at the account of cosubstrates and the process consisted of two stages, i.e., degradation occurred at the beginning prior to the phase of active growth. Figures 5; references 2 (Russian).

USSR

UDC 576.8.095.13:578.088.7

ELECTRORETENTION OF MICROORGANISMS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 5, Sep/Oct signed to press 19
Jan 76 pp 901-905

GVOZDYAK, P. I., and CHEKHOVSKAYA, T. P.

[Text] [English language abstract supplied by authors] Water is liberated from microbial cells in the course of flow of microbial suspensions through dielectrics and conductors of the second kind in electric field. Micro-organisms are retained by electrophoresis and dielectrophoresis, polarization of the cells and particles, electrostatic, dipole-dipole interaction between them. When the current is switched off, the cells are liberated and washed out with small volumes of water, and the regenerated material may be used several times for separating microbial cells from fluids. Effectiveness of retainment of microorganisms increases with an increase in voltage and a decrease in the flow rate. Figures 4; references 13: 11 Russian, 2 Western.

USSR

UDC 582.282.23.095.16:578.088.9

CONDITIONS OF YEAST FREEZE-DRYING STUDIED BY METHODS OF PLANNING EXPERIMENTS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 5, Sep/Oct 76 signed to press
1 Dec 75 pp 906-910

FATEYEVA, M. V., NIKITINA, T. N., LSENKOV, A. N., KODKIND, G. KH., and
SHERMAN, F. B., Institute of Microbiology, USSR Academy of Sciences: Institute
of Poliomyelitis and Viral Encephalitides, USSR Academy of Medical
Sciences; Institute of Organic Chemistry, USSR Academy of Sciences

[Text] [English language abstract supplied by authors] The effect of seven factors on survival and residual humidity of yeast suspensions was studied during freeze-drying of *Saccharomyces cerevisiae* using methods of mathematical planning of the experiment. A multifactor experiment of the type 2^7-4 was performed, according to which all factors were varied at two levels. Adequate equations for regression were obtained to describe the process in the temperature zone above the eutectic point (from -10 to -15°C) and below it (from -30 to -40°C). The effect of the studied factors was found to depend on temperature of freeze-drying. The equations were used for optimizing freeze-drying by the method of "sharp ascending." (The factors cited in the abstract are: culture growth; concentration of suspension; rate of auto-stimulation; continuity of drying; medium for restoration; time of presence in vapors of water before addition of medium for restoration; time of presence in medium for restoration). Figure 1; tables 2; references 12: 9 Russian, 3 Western.

USSR

MICROBIOLOGICAL SYNTHESIS OF PROTEIN ON CELLULOSE. Review of book: MIKROBIOLOGICHESKIY SINTEZ BELKA NA TSELLYULOZE (English above) by A. G. Lobanok and V. G. Babitskaya. Nauka i tekhnika. Minsk, 1976

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 5, Sep/Oct 76 pp 927-928

BEZBORODOV, A. M., Reviewer

[Abstract] The book is especially pertinent at this time in view of the great interest in utilization of microorganisms to transform cellulose wastes into protein-rich fodder. The monograph is unique in the USSR as a summary of most recent publications on microorganism assimilation of cellulose. It has six chapters. Chapter I deals with a general description of cellulose and related plant polysaccharides, and susceptibility of the polymeric structures of the cell walls to enzymatic hydrolysis by microorganisms; Chapter II discusses the physical-chemical aspects of the enzymatic reactions involved; Chapter III examines basic groups of microorganisms which degrade plant polysaccharides in nature; Chapter IV discusses use of cellulolytic enzymes; Chapter V reviews cultivation of bacteria and yeasts on cellulose-containing materials for protein production; Chapter VI inquires into advantages of use of microscopic molds for protein production from cellulose. The reviewer values the text in that it has harmoniously presented the many findings of foreign and Soviet workers in this field. The book is well-written, by erudite authors, it is fully illustrated, and will be of great value to researchers and workers in the microbiological industry.

USSR

UDC 582.282.23.095.32.086

CYTIOLOGICAL MECHANISMS INVOLVED IN ASSIMILATION OF n-ALKANES BY YEASTS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 5, Sep/Oct 76 signed to press
23 Mar 76 pp 844-851

MEYSEL', M. N., MEDVEDEVA, G. A., and KOZLOVA, T. M., Institute of Microbiology, USSR Academy of Sciences

[Text] [English language abstract supplied by authors] The paper describes the cytological mechanism of adaptation of yeasts in the assimilation of aliphatic hydrocarbons added to a growth medium as a sole source of carbon. The process was studied by light optical and electron microscopy, employing fluorescent labelling and electron microscopy contrasting. Two types of yeasts were found, which differed by the response of the cell walls to hydrocarbons: those that formed "channels" and those that did not form them. Cytological response to hydrocarbon assimilation was detected also in the mitochondria and canals of the endoplasmic reticulum. Components of

the Golgi apparatus may also participate in this process, in particular, in formation of peroxisomes (microbodies). Close contacts of the yeast cells with the hydrocarbon being assimilated is important; assimilation may start in a close vicinity of the cell walls. The rate of flavin production by *Candida tropicalis* 303 IBFM increases during growth on solid paraffins, beginning with C₂₀-paraffin. Figures 4; references 23: 15 Russian, 8 Western.

USSR

UDC 663.18

GROWTH OF OBLIGATE METHANOTROPHIC BACTERIA AT INCREASED OXYGEN AND METHANE PRESSURES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 5, Sep/Oct 76 signed to press 16 Feb 76 pp 669-673

STAROVOYTOVA, G. A., MOSKALENKO, E. M., NESTEROV, A. I., and NAZARENKO, A. V., Moscow Mining Institute; Institute of Biochemistry and Physiology of Micro-organisms, USSR Academy of Sciences, Pushchino

[Text] [English language abstract supplied by authors] The growth of obligate methanotrophic bacteria *Methylosinus trichosporium* str. 20 and *Methylocystis parvus* str. 21 was studied at high pressures (up to 100 ata) of methane-air and methane-oxygen mixtures. Partial pressures of methane (up to 100 ata) and nitrogen (up to 28 ata) in the gas mixtures produced no significant effect on the growth of methanotrophic bacteria. Their growth rate decreased substantially with an increase of partial pressure of oxygen from 0.2 to 5-7 ata and was completely suppressed with further increase of oxygen pressure. Various strains did not show specific reactions to the toxic effect of oxygen. With an increase in the initial density of suspension the toxic effect of oxygen on methanotrophic bacteria declined. The level of partial pressure of oxygen that was critical for the bacterial growth increased. Figures 3; table 1; references 15: 7 Russian, 8 Western.

USSR

UDC 576.809.33

THERMOPHILIC HYDROCARBON-CONSUMING BACTERIA: ISOLATION AND PHYSIOLOGICAL PROPERTIES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 5, Sep/Oct 76 signed to press 16 Mar 76 pp 654-659

MIKHALEVA, V. V., KRUCHININA, L. K., and MELNIK, R. A., All-Union Scientific Research Institute of the Synthesis of Proteins and Protein Compounds

[Text] [English language abstract supplied by authors] From the soil cultures of thermophilic hydrocarbon-consuming spore bacteria four strains were isolated by methods of selection in the continuous flow. The strains grew regularly on liquid hydrocarbon-containing media under continuous cultivation conditions at 50-55°. The strains were referred to the following species: *Bacillus mesentericus vulgaris*, *Bac. nondiastaticus*, *Bac. thermocelluloyticus* and *Bac. thermomyloolyticus*. The growth on the liquid mineral medium containing paraffins and oil distillates as carbon and energy sources was seen only in the presence of organic substances, e. g., peptone, yeast autolysate, corn extract, glucose, starch, soybean flour, yeast hydrolysate. The highest increase in the biomass was observed upon peptone addition.

Figure 1; tables 3; references 7: 5 Russian, 2 Western.

USSR

UDC 577.153:582-1.281.21

EFFECT OF SOME SURFACTANTS ON THE BIOSYNTHESIS OF LIPASE BY THE FUNGUS RHIZOPUS MICROSPORUS, STRAIN UZ LT-1

Tashkent UZBEKSKIY BIOLOGICHESKIY ZHURNAL in Russian No 5, 1976 signed to press 29 Sep 75 pp 71-72

SULTANOVA, I. G., and ZUBENKO, T. F., Microbiology Department, Uzbek SSR Academy of Sciences

[Abstract] Addition of the bile salts sodium cholate and sodium desoxycholate to a medium optimum for the biosynthesis of lipase by *Rhizopus microsporus*, strain Uz LT-1 (corn extract, cottonseed oil, water) stimulated the formation of the enzyme by the fungus. The addition of 0.1% sodium desoxycholate to the medium increased lipolytic activity by a factor of 3 to 4 and amounted to 78 ml of 0.05 N KOH. However, the addition of 0.1 to 1% medical bile suppressed the growth of the fungus but lipolytic activity in the culture fluid was at the control level--24 ml of 0.05 N KOH. Tweens 20, 40, 60, and 80 were also tested. Tweens 80 and 40 greatly stimulated lipase formation; lipolytic activity was double to triple that of the control. Tween 60 had little effect and Tween 20 inhibited lipase formation. The lipolytic activity of the fungus was highest in media with Tween 40 or 80 to which cottonseed oil was not added. References 3: 2 Russian, 1 Western.

USSR

UDC 356.33:614.48

AEROSOL METHOD OF DISINFECTION AND DISINFECTING DEVICES

Moscow VOYENNO-MEDITSINSKIY ZHURNAL in Russian No 11, 1976 pp 43-45

KAZHDAN, V. B., candidate of medical sciences, Col, medical science and RAYEVSKIY, K., Maj. m. s.

[Abstract] A brief discussion of the advantages of aerosol method of disinfection over the "wet" method (more economical use of disinfectants, less time consuming, does not form puddles, etc.) is preceded by a description of 4 aerosol generators. The AGD (Fig. 1) operates on the thermomechanical principle and is powered by a gasoline engine. The disinfectant is forced by excess pressure into the stream of incandescent exhaust gases where it is fractionated and forms an aerosol upon partial evaporation.

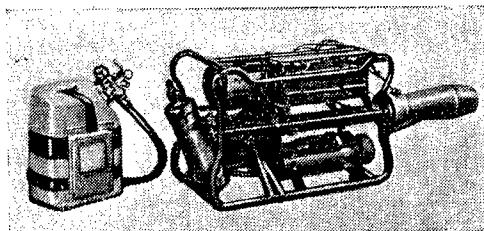


Fig. 1. AGD aerosol generator ready to work.

The PVAN-3 is a pneumatic aerosol nozzle that uses compressed air as a power source. It is based on the principle of successive fractionation of the disinfectant by 2 streams of air one of which breaks up the particles coarsely while the other by whirlpool action disperses them into finer drops. The AR aerosol sprayer also involves double fractionation of liquid by compressed air but is superior to the PVAN-3 in several respects (Fig. 2).

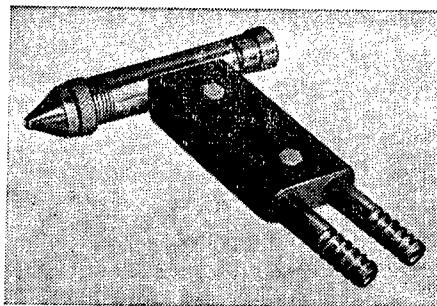


Fig. 2. AR aerosol sprayer

A third device, EP-03, has an electric drive and is based on the centrifugal-injector principle.

Molecular Biology

USSR

UDC 591.486

CHROMATOGRAPHIC FRACTIONATION OF SCRAPING COMPONENTS OF FROG OLFACTORY TISSUES. PREPARATION OF FRACTIONS CAPABLE OF SENSITIZING ARTIFICIAL LIPID MEMBRANE TO ODORANTS

Moscow MOLEKULARNAYA BIOLOGIYA in Russian Vol 10 No 6, Nov/Dec 76 signed to press 12 Sep 75 pp 1249-1259

FESENKO, YE. YE., NOVOSELOV, V. I., PERVUKHIN, G. YA., and FESENKO, N. K., Institute of Biological Physics, USSR Academy of Sciences, Pushchino, Moscow Oblast

[Text] [English language abstract supplied by authors] Fractionation of frog olfactory preparation by ion-exchange chromatography and gel filtration permitted obtaining fractions capable of making artificial lipid membranes sensitive to odorants, such as camphora, musc ambrette and linalool. The sensitizing agent present in active fractions is a high-molecular-weight (m. w. 100 000) protein-containing substance. It is suggested that this agent is a component of a special transport system which may carry the odorous molecules to olfactory receptor cells or remove them from olfactory tissues. Figures 15; references 18: 4 Russian, 14 Western.

USSR

UDC 576.858.6

INTEGRATION AND TRANSFECTION OF AN ARBOVIRUS BY MAMMALIAN CELLS

Moscow MOLEKULARNAYA BIOLOGIYA in Russian Vol 10 No 6, Nov/Dec 76 signed to press 2 Dec 75 pp 1296-1302

ZHDANOV, V. M., and AZADOVA, N. B., Institute of Virology imeni D. I. Ivanovsky, Academy of Medical Sciences USSR, Moscow

[Text] [English language abstract supplied by authors] A system of L cells chronically infected with Sindbis virus was studied. Unlike acute infection wherein mature virions are produced, the chronically infected tissue culture produces subviral structures, infectious ribonucleoproteins. Molecular hybridization experiments revealed the integration of the viral genome (DNA-transcript) into the cellular genome. Transfection experiments showed it was possible to induce the synthesis of the virus in sensitive cells treated with DNA from the chronically infected cells. Figures 4; tables 2; references 15: 8 Russian, 7 Western.

USSR

UDC 631.523(576.1/.5)+(718):(257)

COMPARATIVE GENETICS OF THE PEOPLES OF SIBERIA AND AMERICA IN CONNECTION
WITH THE PROBLEM OF SETTLEMENT, RATES OF EVOLUTION AND GENETIC DIVERGENCE

Moscow BIOLOGICHESKIYE NAUKI in Russian No 10 (154), 1976 signed to press
5 May 76 pp 47-53

SHEREMET'YEVA, V. A., Department of Anthropology, Moscow State University

[Abstract] Population-genetic material is used to discuss the problem of the genetic similarity of the native population of northern Asia as a whole and the native population of America. Analysis of genetic information has established that during the period of population of America, the Siberian and American protopopulations differed from each other genetically by no more than two populations. This unity is the unity of two extensive and internally complex population systems, constantly subject to microevolutionary transformations. The proof of the evolution which occurred is not the differences in the mean frequencies of genes, but rather the development in the area of each of the population systems of its own unique genogeography. The time interval of divergence of a native population of northern Asia and America, reconstructed from genetic and demographic data, is somewhere between 18 and 28,000 years. It is assumed that the genetic similarity is an indication of relatedness, relatedness an indication of the history of the population. It is assumed that the time of population of America by natives from northern Asia dates somewhere between the late pleistocene and the end of the Wisconsin (last) glaciation. Figures 2; table 1; references 19: 11 Russian, 8 Western.

Pharmacology

USSR

UDC 616-001.36-02:615.9

EXOTOXIC SHOCK

Moscow SOVETSKAYA MEDITSINA in Russian No 9, Sep 75 signed to press 5 May 76 pp 19-24

LUZHNIKOV, YE. A., PETROVA, L. I., SAVINA, A. S., KOSTOMAROVA, L. G., IL'YASHENKO, K. K., and SHEKHAYEVA, O. M., Scientific Section for Therapy of Acute Injuries, Moscow Scientific Research Institute of Rapid Aid imeni N. V. Sklifosovskiy

[Abstract] The authors identify exotoxic shock as a form of shock associated with severe exogenous intoxication of chemical etiology. They perceive two basic phases: a compensated phase with a normal or elevated level of the arterial pressure, and decompensated, with a depressed pressure (below 90/60 Hg). Patients included victims of dichloroethane, acetic and hydrochloric acid, barbiturate, and organophosphorus poisonings. Changes are described in hemodynamics, blood microcirculation, and metabolism following the development of acute cardiovascular insufficiency; seen clinically are a "shock lung," a "shock liver," and a "shock kidney." The changes seen are generalized as the clinical features of exotoxin shock. Table 1; references 12: 9 Russian, 3 Western.

USSR

UDC 612.176

EFFECT OF ATROPINE AND INDERAL ON THE ACTIVITY OF CARDIAC MECHANORECEPTORS

Moscow VESTNIK MOSKOVSKOVO UNIVERSITETA in Russian No 4, Jul/Aug 76 signed to press 27 Jun 74 pp 29-32

VASIL'YEVA, A. D., KAMENSKAYA, V. N., SAMONINA, G. YE. and UDEL'NOV, M. G., Biology Faculty, Department of Human and Animal Physiology

[Abstract] In order to clarify the effect of atropine and inderal on the cardiac afferent receptor apparatus the electrocardiogram and electroneurogram of the peripheral end of the cardiac nerve were studied in pithed frogs with silver wire electrodes at the end of the vago-sympathetic fiber. Small fragments of filter paper impregnated with drug were placed on the ventral surface of the auricle. Atropine and inderal increased the frequency and amplitude configuration of afferent impulses in the cardiac nerve. The character of afferent activity changes did not depend on the sign or value of cardiac chronotropic reactions. Figures 3; tables 2; references 7: 4 Russian, 3 Western.

Physiology

USSR

UDC 612.822.3

VISCERAL EVOKED POTENTIALS IN THE CORTICAL AND THALAMIC STRUCTURES AND MESENCEPHALIC RETICULAR FORMATION

Baku IZVESTIYA AKADEMII NAUK AZERBAYDZHANSKOY SSR, SERIYA BIOLOGICHESKIKH NAUK in Russian No 1, 1976 pp 97-105

GADZHIYEVA, N. A., RZAYEVA, N. M., and DMITRENKO, A. I.

[Abstract] This article presents a study of the nature of the formation of certain components of the visceral potential in the cortical and thalamic structures and mesencephalic reticular formation as a function of the channels of conduct of the visceral excitation. The task of the study did not include that of answering the question of the genesis of the various components of the visceral potential, but rather only studying the nature of their formation in the structures, as well as in the MRF depending on its functional condition. The experiment showed that the nature of change in cycles of restoration of the evoked potentials was similar in all the structures studied: aminasine retards the development of EP, depresses their amplitude and significantly increases the interval between two stimuli necessary for the appearance and recovery of a response to the second stimulus--the test stimulus. One unexpected aspect was the strong manifestation and duration of changes at the level of the SMC and the lower manifestation and duration at the MRF. This may result from the fact that the reaction of the reticular neurons of the mid-brain, forming the EP in response to VS may involve a dual mechanism: spinoreticular and corticoreticular, realized by a system of the most rapidly conducting projection corticofugal fibers. Figures 5; references 26: 15 Russian, 11 Western.

USSR

UDC 612.825.5:612.014.43

DYNAMICS OF CHANGE IN EVOKED POTENTIALS IN THE AUDITORY CORTEX IN ANIMALS EXPOSED TO HEAT OF DIFFERENT INTENSITIES

Tashkent UZBEKSKIY BIOLOGICHESKIY ZHURNAL in Russian No 5, 1976 signed to press 13 Feb 76 pp 31-33

TURSUNOV, Z. T., and ABDUSAMATOVA, M. V., Institute of Physiology, Uzbek SSR Academy of Sciences

[Abstract] Rabbits, cats, and dogs with chronically implanted electrodes in the primary auditory cortex were subjected to sounds (60 db, frequency 1500 Hz) in a chamber heated to 35 and 50°. Exposure to the high heat caused substantial changes in the configuration of the evoked potentials. At 35°, the latency period was significantly prolonged in the rabbits (by 23.8%), the amplitude of the positive phase decreased (by 17%), and the

duration of the negative phase was shortened (by 16.8%). In the cats, the changes in evoked potentials were slight. Only the duration of the positive phase increased (by 25.8%). In the dogs, the latency period was prolonged (by 15.4%), the amplitude of the positive phase increased (by 29.6%) while that of the negative phase decreased (by 24.1%). Exposure to the higher temperature (50°) caused more significant changes in the evoked potentials in all the animals. The latency period of the response to sound was considerably prolonged and the amplitude and duration of the potentials decreased sharply. These changes were more pronounced in the cats and rabbits. Figure 1; table 1; references 4 (Russian).

USSR

UDC 612.014.41+612.111.3+612.119+615.739

ERYTHROPOIETIC ACTIVITY IN MAN AFTER EXPOSURE TO HYPERBARIC HYPEROXIA

Moscow BYULLETEL' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 11, 1976 signed to press 4 May 76 pp 1299-1300

VOYTKEVICH, V. I., VOLZHSKAYA, A. M., and MYASNIKOV, A. R., Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences, Leningrad

[Abstract] Plasma erythropoietins averaged 47 ± 7 arbitrary units in 8 of 9 human subjects before they were exposed for 10 minutes to compressed air in a high pressure chamber corresponding to a depth of 100 m. Eighteen to 20 hours later serum erythropoietin levels dropped to 25 ± 6 arbitrary units on the average. No erythropoietins were found in 2 individuals after exposure to hyperbaric hyperoxia and the inhibitor of erythropoiesis was found in another. Before the experiment the quantity of erythropoietins was lower in the subjects previously conditioned to hyperoxia than in unconditioned persons. Exposure to hyperoxia had no effect on the hemoglobin concentration, RBC count, hematocrit and other parameters of peripheral blood.

Figure 1; table 1; references 11: 7 Russian, 4 Western.

Public Health

USSR

UDC 612.6

KINETICS OF SURVIVAL AND EXPERIMENTAL DETERMINATION OF SENESCENCE RATE

Moscow IZVESTIYA AKADEMII NAUK SSSR SERIYA BIOLOGICHESKAYA in Russian No 6, Nov/Dec 76 signed to press 15 Jun 76 pp 789-794

EMANUEL, N. M., OEUKHOVA, L. K., BUNTO, T. V., and DYAKOVA, V. V., Institute of Chemical Physics, USSR Academy of Sciences, Moscow

[Text] [English language abstract supplied by authors] The kinetics of survival of linear mice CBA, C3HA, hybrids of the first generation (C57BLXCBA), nonlinear laboratory mice SHK was studied. The age changes of body weight, frequency and rate of growth of spontaneous malignant tumors were considered. The average values of the senescence rate were calculated by survival curves. The correlation between the mean and the maximum lifespan was exposed. It can be used for foretelling the effectiveness of various influences on aging. Figures 6; tables 2; references 16: 9 Russian, 4 Western.

USSR

UDC 617.7-007.681:313.13(470)

DISTRIBUTION OF PRIMARY GLAUCOMA IN CERTAIN TERRITORIES OF THE RSFSR

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep/Oct 76 signed to press 12 Jan 76 pp 86-88

KOZLOVA, L. P., candidate of medical sciences, SOKOLOVA, P. D., ZUBAREVA, T. V., SOROVA, I. A., GLUKHOVA, P. V., VOYTOVA, R. N., ANZHELOV, V. O., doctor of medical sciences, ZHUKOVSKIY, G. S., candidate of medical sciences, and NEPOMNYASHCHIY, V. P., Moscow Scientific Research Institute of Eye Diseases imeni Gelmgolts; Scientific Research Institute of Social Hygiene and Organization of Public Health imeni N. A. Semashko

[Abstract] Data available from earlier surveys of disease in certain areas of the RSFSR were unusable for the authors because the data were incomplete. To assure information on glaucoma which would be suitable for processing, their work was carried out on 5000 healthy and 4737 patients in the Volgograd, Kaluga, and Voronezh Oblasts, and the Udmurt ASSR. The findings were essentially the same for these areas, incidence being 2.8 ± 0.2 per 100 inhabitants. There was no difference in level among rural and urban residents or among male or female subjects. The incidence increased sharply in the 60-69 age group. Table 1; references 9 (Russian).

USSR

UDC 911.3:(616-02:613.6/9)
911.3:(616-02:613.16)

COMBINED EFFECT OF NATURAL AND SOCIOHYGIENIC FACTORS ON PUBLIC HEALTH

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 229-232

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.28 by K. Murav'yeva]

SHANDALA, M. G., and ZVINYATSKOVSKIY, YA. I.

[Text] The Kiev Scientific-Research Institute of General and Communal Hygiene imeni A. N. Marzeyev is studying the combined effect of natural and sociohygienic factors on the health of the populations of various economic-geographic districts of the Ukrainian SSR (21 cities and 12 rural districts). A medicogeographical evaluation is made for each locality, together with a description of living conditions (air pollution, noise level and the like). At many populated points the phenomenon of synergism may arise, when the various environmental factors present will reinforce one another's negative effects. Among the complex of negative factors favoring an increase of morbidity of the cardiovascular and nervous systems, the organs of nutrition, and other areas of the organism, great prominence attaches to overstresses of neuropsychic character, which affect primarily the inhabitants of large cities. When any environmental protection measures are taken, it is first of all necessary to exclude the possibility of any resultant detriment to human health. This means it is important to study the entire environmental complex, establishing a significance coefficient for each factor present, such coefficients to be determined by a comparison of public-health data with data on the medicogeographic and hygienic situation.

USSR

UDC 911.3:61

IMPORTANCE OF MEDICOGEOGRAPHIC RESEARCH IN ENVIRONMENTAL PROTECTION

Alma-Ata PROBL. EKOL. I MED. GEOGR. KAZAKHSTANA. VYP. 5 [Problems of Ecology and Medical Geography in Kazakhstan. No 5. A Collection] in Russian 1976 pp 7-9

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.5 by L. Z.]

AYRINYAN, A. P., and AVANESYAN, R. M.

[Text] A program has been undertaken to produce a "Comprehensive Medico-Geographic Atlas of the Armenian SSR". This atlas will consist of an introduction and five sections (the natural environment and its medicogeographic

assessment; socio-domestic and industrial conditions of the population; public health; morbidity of the population and nosogeography; and protection of the population's health), and a conclusion. The atlas will include more than 100 charts, chart-diagrams and diagrams. It is intended for the use of public-health organizers, medicogeographers, practicing physicians, geographers, and planning and projection organizations.

USSR

UDC 911.3:61

CARTOGRAPHIC SOURCES FOR MEDICOGEOCHEMICAL EVALUATION OF A TERRITORY FOR PUBLIC-HEALTH PURPOSES

Moscow VOPR. MED. GEOGR. [Problems of Medical Geography. A Collection] in Russian 1975 pp 12-13

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 1976 Abstract No 9.36.2 by L. Saravayskaya]

TSVETKOVA, G. A.

[Text] The medicogegeochemical evaluation of a territory presumes the analysis of its geochemical situation and the revelation of any diseases associated therewith. The following series of charts are necessary in order to arrive at a cartographic analysis of medicogegeochemical conditions: 1) charts of the components of the terrain (vegetation, soils, biological-soil conditions, Quaternary deposits, hydrochemical); a chart of the terrain-geochemical conditions which reflects the distribution of chemical elements and also their migration, and 2) demographic charts (population density, distribution of population by ethnic group, guarantee of medical assistance) and nosogeographic charts (distribution of diseases), a comparison of which makes possible the delineation of districts on the basis of morbidity indices. On the basis of the results of analysis of these two series, there is then compiled a composite medicogegeochemical chart which reflects both the terrain-geochemical conditions and the morbidity of the population within the limits of the medicogegeochemical districts selected for study.

USSR

UDC 628.162.9

MECHANISM FOR WATER FLUORINIZATION

Moscow ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZYAYSTVO in Russian No 11, 1976
p 27

DAGAYEV, P. F., Engineer

[Abstract] While fluoride content in Moscow's water sources naturally is less than 0.3 mg/l, and in the Moscow River, 0.15-0.20 mg/l, the newness of the idea and lack of suitable equipment have delayed fluoridation of the city's water supply. Local factories have not produced fluoride-containing reagents in safe containers for use, but rather in paper bags that easily burst, releasing the dangerous powder. Furthermore, proper dosage has not been properly controlled. Now many of these problems have been solved, and water fluoridation has been started at the Rublev Water Treatment Plant, which utilizes water from the Moscow River to produce the modest amount of 400,000 M³ of water daily. The apparatus used sodium fluoride in a solution which makes protection of metal surfaces unnecessary. The functioning of the apparatus is described. Workers are protected from the highly toxic fluoride by solid walls and ventilating systems.

USSR

UDC 69.05:614.8

ANALYSIS OF CAUSES OF ACCIDENT TO MECHANICAL ASSEMBLERS

Moscow MONTAZHNYE I SPETSIAL'NYE RABOTY V STROITEL'STVE in Russian No 10, 1976 signed to press 26 Feb 76 pp 25-26

ISAKOV, V. N., and SHUMOVSKIY, I. K., Engineers, and KOTOV, K. K. and OSTROVERKHOV, V. I., candidates of technical sciences, Krasnodar Branch of the All-Union Scientific Research Institute for Special Assembling Machinery, Main Technical Administration, Krasnodar

[Abstract] Ordinarily studies of accident causes have been based on the primary causes in specific occupations, experience and age groups, types of work and usual types of accidents. A variant approach is the monographic method described here, wherein direct information from accident reports is studied to determine the direct primary cause of an accident. Although more time-consuming than the statistical method, it offers the advantage of revealing the real technical failures that lie at the heart of many accidents. Results show that flaws and defects in machinery are often the actual causes of accidents, along with incorrect operation. The results of the monographic analysis are presented for specific types of machinery and accidents involving them. The report does not cover accidents resulting from human or organizational failures. The need for training in related specialties as well as in a narrow specialization is indicated. Table 1.

USSR

UDC 616.082-039.57(-22)

AN ATTEMPT AT CREATING A MOBILE PERMANENTLY OPERATING SYSTEM FOR OUT-PATIENT SERVICES IN RURAL AREAS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 11, 1975 signed to press
26 Mar 1976 pp 21-25

VAKHRAIMEYEVA, N. I., candidate of medical sciences, BINKE, L. YA., DATSKOVSKAYA, N. V., and KALININSKAYA, A. A., Section for Public Hygiene and the Organization of Public Health Services, (director L. S. Kutina, Candidate of Medicine); of the Moscow Scientific Research Institute for Epidemiology and Microbiology and the Section for Medical Services to the Rural Population (Chief of Section L. Ya. Binke), of the RSFSR Ministry of Health, Moscow

[Abstract] Mobile public health units are operating in 45 rural areas of the republic, with their exact procedures adapted to particular local situations. Their chief objectives are to assure essential, trained health personnel needed in the rural areas, to arrange needed consultative health care for both sick and well patients, and to provide medical assistance to children. Three basic forms of medical aid are used: use of regular health personnel for systematic preventive medicine, organization of mobile specialized health examinations for early diagnosis and prevention, and actual field units for the rural residents during seasonal work periods. A summary of specific practices in individual regions of the RSFSR is presented, followed by a statistical summary of the types of ailments and the number of patients visited by age groups. Recommendations are offered for efficient rural out-patient services.

USSR

UDC 362.147(47+57)

DISPENSARY METHOD IN SOVIET HEALTH SERVICES

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 11, 1976 signed to press
25 Jun 1976 pp 17-21

DEMCHENKOVA, G. Z., candidate of medical sciences, POLONSKIY, M. L., docent, ALEKSEYEV, L. I., candidate of medical sciences, and YEVGRAFOVA, T. I., candidate of medical sciences, All-Union Scientific Research Institute for Social Hygiene and the Organization of Public Health Services, Moscow, imeni N. A. Semashko

[Abstract] In keeping with the aims of the Tenth Five-Year Plan for improving the quality of services and raising the standard of living of Soviet citizens, Soviet Public Health agencies are striving to perfect a coordinated system of socio-economic, hygienic and preventive medicine capabilities that

will improve the general physical and mental well-being of the population of the USSR. Special attention in preventive medicine is being devoted to the system of dispensaries for public health services throughout the Soviet Union, combining the facilities of polyclinics, public health institutions, dispensaries, hospitals, sanatoria and public health clinics. Of special importance is the development of mobile public health units for comprehensive health examinations and diagnoses. Health records for all patients need to be gathered in the files of a responsible physician, serving as the general practitioner for the patient. Expansion and integration of laboratory and other auxiliary diagnostic service and X-ray facilities is essential to improvement of the dispensary system. Economic factors, particularly relating to sound investment practices, must also be considered.

Radiobiology

GDR/USSR

UDC 911.3:/616-02:613.6/

THE EFFECT WHICH SOURCES OF IONIZING RADIATION HAVE ON THE ENVIRONMENT

Berlin ABH. AKAD. WISS. DDR. Irg. 1974 in German pp 189-191

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 9, 76 Abstract No 9.36.139 by A. S.]

HERRMANN, D.

[Text] The large amount of work now being conducted in the German Democratic Republic concerns not merely large atomic installations but various branches of industry where the use of radioactive material has an adverse effect on human health. Reports on measures for the control of SAAS have been made, and data on dosimetric and spectrographic measurements of alpha- and beta-radiation in the air and water at a number of experimental areas have been obtained; one recalls, in this connection, laboratory observations on the behavior of 60 different radioactive elements.

USSR

ROLE OF DIFFUSION IN TRANSPORT OF RADIOACTIVE SUBSTANCES THROUGH THE SKIN

Moscow BIOFIZIKA in Russian Vol 21 No 5, Sep/Oct 76 signed to press 20 Sep 74 pp 838-844

OSANOV, D. P., and FILATOV, V. V., Institute of Biological Physics, USSR Ministry of Health, Moscow

[Text] [English language abstract supplied by authors] It has been experimentally established that distributions of strontium, cesium and americium in "living" and "dead" swine skin are similar. This phenomenon is used as a base for constructing a diffusion model of radionuclide transport through the skin. Its substantiation is made according to one of the criteria of the similarity theory-criterium of Nusselt. Figures 3; references 15: 6 Russian, 9 Western.

USSR

UDC 631.438.1:631.445.62

NATURAL RADIOACTIVITY OF TYPICAL TERRA ROSSA IN THE ELUVIAL REGIONS OF WESTERN GEORGIA

Moscow VESTNIK MOSKOVSKOVO UNIVERSITETA, BIOLOGIYA, POCHVOVEDENIYE, in Russian No 4, Jul/Aug 76 signed to press 20 Jan 75 pp 109-113

YASTREBOV, M. T., Faculty of Soil Science, General Soil Science Department

[Abstract] The natural radioactivity of terra rossa (krasnozem) was studied in samples from three Western Georgia regions, taken from leveled eluvial terraces of zebra-like loam or clayey-loam talus. The radionuclides ^{238}U , ^{226}Ra , ^{232}Th and ^{40}K were determined by gamma spectroscopy. Previous data of Ramashkevich indicate that the SiO_2 to Al_2O_3 ratio is around two in terra rossa, with small Fe loss and marked accumulation of Ca and Mg in the upper level. The concentration of the three radionuclides studied was found to exceed previous results by a factor of 2-3, while the ^{40}K concentration was 2-4 times lower. This is due to the mineral wealth of the mantle and radioactive fallout from the atmosphere. ^{238}U was found at $(4.8-6.1)\times 10^{-4}\%$, ^{226}Ra at $(12.5-15.3)\times 10^{-11}\%$, ^{232}Th at $(7.2-13.7)\times 10^{-4}\%$ and ^{40}K at $(0.4-1.2)\times 10^{-4}\%$. The partial migration of ^{238}U and particular migration of ^{232}Th from humus-accumulating layers to eluvial layers is due to colloid descent through fissures and chelation with the high concentration of fulvic and humic acids present. ^{226}Ra accumulates in both layers due to biological sorbtion. The high concentration of the radionuclides presents the possibility of their entering food crops. Tables 2; references 11: 10 Russian, 1 Western.

USSR

UDC 614.73-07 + 615.849.2.015.3.07 + 614.876-07

OPTIMIZING THE CONDITIONS OF RADIOMETRY AND GAMMA-SPECTROMETRY OF LOW-ACTIVITY BIOLOGICAL SAMPLES

Moscow GIGIYENA I SANITARIYA in Russian No 11, 1976 signed to press 3 Sep 75 pp 87-91

MALYKHIN, V. M., and IVANOVA, N. I., Scientific-Research Institute of the Hygiene of Marine Transport, Leningrad

[Abstract] In biological samples where the radioisotopic activity is only slightly above the natural level, or where measurements are prolonged or difficult, it is important to determine the best measurement regime as well as the most sensitive instrumentation and methods. The authors first define the "criterion of radiometric quality" (reciprocal of the product of measurement time and the square of relative error), then proceed to set up rough relationships between this criterion and several familiar variable factors--activity of the radioactive substance in a sample, using several different methods (for Sr⁹⁰); geometry of the measurement, levels of activity and energy of the radiation (for beta radiation); and measurement of gamma radiation using the scintillation spectrometer. Nomograms were set up for determining labor input in the measurement of various activity levels for gamma radiation in the 0.1-1.5 Mev range. The analysis facilitates the best choice of instruments and procedures over a wide range of measurement of radioisotopic activity. Figures 5; references 5: 4 Russian, 1 Western.

Therapy

USSR

UDC 616.145.154-005.6-085.849.19-073.537

FLUORESCENT ANGIOGRAPHY IN LASER THERAPY OF THROMBOSES OF RETINAL VEINS

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep/Oct 76 signed to press
29 Feb 76 pp 56-60

KRASNOV, M. M., academician, Academy of Medical Sciences USSR, PEREVERZINA, O. I., YELISEYEVA, E. G., candidate of medical sciences, and DIMITROVA, V. G., All-Union Scientific Research Institute of Eye Diseases, USSR Ministry of Health

[Text] [English language abstract supplied by authors] Fluorescent angiography is an indispensable method of investigation in thromboses of the retinal veins (to determine stenosis of the vascular bed or the site of obstruction) and also to control the effect of the ongoing laser treatment and the dynamic progress of the process. The authors applied the laser-coagulation therapy to 26 patients with thrombosis of the retinal veins and on the ground fluorescent angiography findings, obtained before and after laser therapy, ascertained a reduction of the venous circulation time from 23.8 down to 14 sec on the average, accelerated emptying from 4 min 43 sec down to 44 sec and in the affected veins-from 16 min 11 sec down to 4 min 20 sec. Fluorescent angiography helped reveal the spots of the fluoresceine escape, the newly formed vascularization, microaneurysms, which served as an object of laser coagulation and disappeared or diminished in size after its applications. Unlike any other modern methods fluorescent angiography furnishes a direct indication as to the pathogenicity of the curative effect in laser therapy of venous thromboses of the retina. It confirms objectively the fact of restored or improved circulation in the affected zone (under the effect of treatment). Table 1; References 4: 1 Russian, 3 Western.

USSR

UDC 616.127-005.8-036.11-08-039.72:658.5

EXPERIENCE IN THE ORGANIZATION OF WORK IN A UNIT (DEPARTMENT) OF INTENSIVE THERAPY AND REVIVAL OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION AT A RAPID AID HOSPITAL

Moscow SOVETSKAYA MEDITSINA in Russian No 9, Sep 75 signed to press 15 May 76 pp 60-65

GOLIKOV, A. P., and YERSHOVA, N. V., Moscow Scientific Research Institute of Rapid Aid imeni N. V. Sklifosovskiy

[Abstract] Beds for intensive therapy of myocardial infarction were organized in Soviet clinics from 1960 on; starting in 1965, specialized units were created. The features of these units have already been extensively described (P. Ye. Lukomskiy in KLIN. MED No 8, 1970, 82, and others). This

program is a part of the national organization of hospitals of rapid aid and of the further improvement of specialized therapy. The authors outline pertinent work at their institute which can serve as a model for specialized units at multi-purpose rapid aid hospitals. Facilities and equipment, duties and interaction of personnel, early physical and psychological rehabilitation, bed-occupancy, preventive hygiene, and deontological problems are discussed. References 17: 12 Russian, 5 Western.

USSR

UDC 616.12-004.06:616-056.52-085.835.56-615
.241.24

USE OF A NEGATIVELY CHARGED FEPRANON AEROSOL IN COMPREHENSIVE TREATMENT OF PATIENTS WITH ATHEROSCLEROTIC CARDIOSCLEROSIS ACCOMPANIED BY OBESITY

Moscow VOPROSY KURORTOLOGII, FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 5, 1976 signed to press 14 Oct 74 pp 19-24

TKACHENKO, A. F., and LEONOV, V. M., Central Institute of Health Resort Science and Physical Therapy, Moscow

[Abstract] The tests involved 59 women and 31 men suffering from atherosclerotic cardiosclerosis along with obesity caused by overeating, along with such additional ailments as osteochondrosis of the upper spine, dystrophic arthrosis, and deformative spondylosis. The patients were treated by a comprehensive therapy including a special diet for weight reduction, therapeutic gymnastics, hydrosulfide baths and a negatively charged fepranon electroaerosol. The treatment regime resulted in a beneficial effect on the functional status of the cardiovascular system, improved lipoid-cholesterol metabolism, and more desirable readings of blood coagulation. The use of negatively charged fepranon electroaerosols according to the method proposed is indicated for treating patients with atherosclerotic cardiosclerosis accompanied by metabolic dysfunctions, and the exact results are influenced by the pharmacological properties of the preparation and the precise electrical charge. Tables 2; references 11 (Russian).

USSR

UDC 616.147.3-036.12-085.847.8

THERAPEUTIC APPLICATION OF AN ALTERNATING CURRENT MAGNETIC FIELD IN TREATING CHRONIC VASCULAR AILMENTS OF THE LOWER EXTREMITIES

Moscow VOPROSY KURORTOLOGII, FIZIOTERAPII, I LECHEBNOY FIZICHESKOY KUL'TURY in Russian No 5, 1976 signed to press 19 Feb 1976 pp 16-19

PASYNKOV, YE. I., KONSTANTINOVA, G. D., and VLASOVA, YE. I., Department of Surgery (Chairman-Professor V. S. Savel'ev, Academician of the USSR Academy of Medical Sciences, N. I. Pirogov Medical Institute, Moscow; and the Physiotherapy Section (Chairman-Professor Ye. I. Pasynkov), of the N. I. Pirogov City Clinical Hospital, Moscow

[Abstract] In the study 271 patients aged 18 to 62 years were treated; all had either post-thromboid or varicose vein conditions in the lower extremities, and had been suffering for periods ranging from less than one year to more than ten years. The patients were placed on couches and subjected to magnetic fields both longitudinally and transversely, according to predetermined variants, for periods of 15-20 minutes over a course of 20 days. Where trophic ulcers were present, one inductor was placed in contact with the sore, and the procedure, of 10-20 minutes, was repeated 20-30 times. Several case studies are presented in the report. Good results were obtained in 87% of cases, satisfactory results in 12.6%, and unsatisfactory results in but one case (0.4%). Results indicated that the effectiveness of an AC magnetic field increased if its use came very soon after an acute phlebothrombosis. Effectiveness increased with repeated applications. Magnetotherapy was helpful for trophic skin ailments with chronic venal insufficiency in combination with other procedures, and for post-operative conditions of both varicosity and thrombosis of the lower extremities. References 3 (Russian).

USSR

USE OF ELECTRIC CURRENT IN OBSTETRICS

Moscow ZDOROV'YE in Russian No 11, 1976 pp 4-5

CHERNYAKHOVSKIY, A.

[Abstract] Earlier means of alleviating parturitional pain (narcosis, psychological preparation, etc.) have shown themselves to be only partly satisfactory, for several practical and medical reasons. Soviet researchers and obstetricians for some years have been seeking a simple and readily available means which would assure the desired analgesic effect without entailing complete immobilization of the patient. Pulsed electric current was used as the basis of the "Elektroson" apparatus, which, however, produced

complete sleep. Then K. A. IVANOV-MOROMSKIY, L. S. RAKHMILEVICH and SH. G. POGOSYAN suggested increasing the pulse frequency; this idea was incorporated in the "Elektronarkon-1" apparatus, which modifies cerebral activity to the point of a dreamlike state of lessened pain perception without impairing the required cerebral participation in the birth process. This apparatus is now in standard use in Soviet obstetrics and has given admirable results, notably in difficult deliveries. Figure 1.

Veterinary Medicine

USSR

UDC 619:616.981.452:635.4

CONTROL OF THE ROUTES OF TRANSMISSION OF SWINE FEVER VIRUS

Moscow VETERINARIYA in Russian No 11, 1976 pp 56-58

TIKHONOV, L. I., All-Union Institute of Experimental Veterinary Medicine

[Abstract] A epizootological survey conducted in various parts of the Soviet Union from 1971 to 1976 revealed that the main cause of swine fever on three-fifths of the farms investigated was feeding the animals infected slaughterhouse wastes. Almost all of the meat packing plants responsible received apparently healthy swine from farms affected with the disease but not quarantined. Many of the animals proved to be virus carriers. Sale of the by-products of the slaughter of these animals to the farms and their consumption by healthy swine thus contributed to the circulation of the causative agent. Improved records-keeping both by the meat packing plants and by the supplier farms would provide valuable information for immediate action in case of an outbreak of swine fever.

USSR

UDC 619:615.37:636.4

INHALATION VACCINATION OF SWINE SIMULTANEOUSLY AGAINST AFRICAN SWINE FEVER, ERYSIPELAS, AND AUJESZKY'S DISEASE

Moscow VETERINARIYA in Russian No 11, 1976 pp 42-44

KHASANOV, CH. G., Kazan' University, and SELIVANOV, A. V., All-Union State Institute for the Control of Veterinary Preparations

[Abstract] Piglets were immunized by inhaling a mixture of vaccines against African swine fever (strain K), erysipelas (BP_2), and Aujesky's disease (Strain BUK-628). The vaccines produced no side effects and created strong immunity judging by the high antibody titers that developed in 7 to 12 days. Within an hour after vaccination, the causative agents of the 3 diseases were isolated from the heart, lungs, lymph nodes, and other organs and tissues of the animals. Analysis of the blood revealed a proliferation of lymphoreticular elements in the spleen, lungs, trachea, and lymph nodes and pronounced changes in the serum proteins and hematological indices. These changes appeared sooner than in animals vaccinated intramuscularly.

USSR

UDC 619:616.988.21:615.37

RESULTS OF TRIALS OF RABIES VACCINE OF THE ALMA-ATA INSTITUTE OF VETERINARY MEDICINE IN URAL OBLAST

Moscow VETERINARIYA in Russian No 11, 1976 pp 41-42

BUCHNEV, K. N., KOZHEBEKOV, Z. K., ZHANUZAKOV, N. ZH., ROSLYAKOV, A. A., KVASOV, I. L., SEDOV, V. A., CHERYKAYEV, B. P., SYGACHEV, V. N., BUDKO, B. M., OMAROV, T. F., and AFANAS'YEV, V. P.

[Abstract] In June 1974, several weeks before the seasonal outbreak of rabies, 24,320 head of cattle--in the Ural Oblast of the Kazakh SSR--were inoculated with rabies vaccine produced by the Alma-Ata Institute of Veterinary Medicine. Only 9 (0.03%) cattle subsequently contracted the disease, whereas 85 of 4637 nonvaccinated animals (1.83) became sick and died of rabies. In August 1975, 18,695 head of cattle were revaccinated and in November and December 21,407 received prophylactic vaccinations; 27,920 remained unvaccinated. A total of 193 animals died from 1 October 1975 to 1 February 1976, but only 1 of the prophylactically vaccinated and none of the revaccinated animals died. An outbreak of the disease on 5 farms was halted by treating 1595 head of cattle with antirabies serum and then vaccine. Only 2 of the treated animals became sick. Table 1; no references.

USSR

UDC 662.997

CREATION OF A WATERING PLACE WITH A SOLAR STILL

Ashkhabad PROBLEMY OSVOYENIYA PUSTYN' in Russian No 5, 1976 signed to press 24 Jun 75 pp 65-69

SEYITKURBANOV, S. and RABINOVICH, L. I., Physicotechnical Institute, Academy of Sciences Turkmen SSR, and "Giprovodkhoz" Institute, USSR Ministry of Reclamation and Water Management

[Abstract] The first pilot solar still in the USSR was recently installed around a well on a farm in Turkmenistan to provide fresh water for cattle. Initial tests turned up a number of flaws in the design and construction of the still, e. g., undue complication (extra pump to force the distillate and rainwater into freshwater tanks instead of mixing the distillate and rainwater with saltwater directly in the tanks and then allowing the freshwater to flow into the troughs by gravity); excess storage capacity at ground level; inadequate arrangement for handling the overflow of brine; treatment of all pipelines with concrete, thus making access to them and repair of leaks difficult and expensive; failure to protect metal parts against corrosion. In addition, the actual construction was faulty in many respects (significant deviations from the plans and poor workmanship) because the still was built on the spot by local personnel rather than by professional craftsmen.

USSR

UDC 619:616.24:541.182.2/.3:615.779.5

MEDICINAL AEROSOLS IN THE TREATMENT OF BRONCHOPNEUMONIA

Moscow VETERINARIYA in Russian No 10, 1976 pp 67-72

LEBEDEV, L. A., GOLOVIZNIN, YU. V., and OMAROV, R. SH.; Omsk Veterinary Institute

[Abstract] In the case of the veterinary care of large groups of animals, it is necessary to combine basic preventive measures with the use of new forms of treatment; this is especially true in connection with the group method of treatment, and particularly when respiratory diseases of young animals are concerned. The authors summarize the data from the experience of 10 years' use of aerosol therapy with penicillin, streptomycin, erythromycin, tetracycline and other antibiotics. It is concluded that 1) the inhalation of medicinal aerosols (especially the antibiotics, or trace elements in combination with antibiotics in the case of young pigs), is an effective method of group therapy for both immature cattle and pigs, especially during the acute course of bronchopneumonia (cure in 93-100% of animals); and 2) the aerosol treatment of calves and young pigs suffering from bronchopneumonia, notably in epidemics, is much more economical than the intramuscular treatment, allowing a 25-50% reduction in the amount of medicine required.

USSR

UDC 619:616.995-084:639.215.2

INFESTATION OF CARP WITH BOTHRIOCEPHALUS

Moscow VETERINARIYA in Russian No 10, 1976 p 55

BALATSKIY, K. P., IVASIK, V. N., (deceased), BOYARCHUK, N. L., and NOVOSAD, S. I.; L'vov EVI, "Tsuman'" Fishery

[Abstract] A number of preparations (kamala, phenosal and phenothiasine, among others) have been recommended for control of parasitic worm Bothrioccephalus gowkongensis. Feeding of the crushed or milled seeds of the narrow-leaved blue lupine has now been advanced as a means of direct action against the parasite. This plant contains an alkaloid-like compound which acts upon the central nervous system. Several series of tests run by the "Tsuman'" fishery (Volynskaya Oblast, Ukrainian SSR) have amply demonstrated the effectiveness of this material in eliminating Bothrioccephalus in captive fish. Using a 20-25% proportion of blue lupine seed in the fish food eliminated the parasite in 30-45 days (in this year's brood).

USSR

UDC 619:616.982.17-085.37

EVALUATING THE IMMUNOGENIC PROPERTIES OF THE VACCINE DERIVED FROM STRAIN BP₂,
WITH USE OF AEROSOL APPLICATION

Moscow VETERINARIYA in Russian No 10, 1976 pp 35-36

KUSHNIR, A. T., BURTSEV, V. I., IZOTOVA, N. A., and BONDARENKO, I. M.; All-Union Scientific-Research Institute of Veterinary Virology and Microbiology

[Abstract] The method of aerosol application is a very promising and already widely used technique in the mass vaccination of farm animals; for example, its effectiveness in swine erysipelas has been demonstrated in tests dating back to 1958. Nevertheless, much remains unclear regarding the method: the viability of swine erysipelas bacteria during the period of presence of the vaccine has not been studied; the minimal immunizing dose of bacteria for intramuscular or aerosol application has not been determined; there are no data on the concentration of aerosol vaccine at the local site, or on doses inhaled by the animal, such as to assure the formation of active immunity; and there is not enough information on the estimation of the force of such immunity in connection with the results of control infection of aerosol-vaccinated swine. The present study was aimed at resolving these questions. Unvaccinated young swine (2-4 months) from farms not much affected by infectious diseases were used as test animals, these being treated with commercial antierysipelas vaccine derived from the BP₂ strain; the viability of the bacteria during the period of presence of the latter was determined. Inactivation of the swine erysipelas bacteria with aerosol application of the BP₂ vaccine proceeded as follows: vaccine present 3 months, inactivation 66.6%; 4 months, 76.7%; 5 months, 82.0%; 6 months, 89.1%; and 7 months, 90.3%. It is expected that the present study will advance the use of the promising and highly convenient aerosol method. Table 1.

USSR

UDC 619:616,988.75-085.37:636.22/.28

SIMULTANEOUS IMMUNIZATION OF HORNED CATTLE AGAINST INFECTIOUS RHINOTRACHEITIS

Moscow VETERINARIYA in Russian No 10, 1976 pp 33-35

KRYUKOV, N. N., and SUNATOV, I., All-Union Institute of Experimental Veterinary Science

[Abstract] One of the factors influencing the formation of postvaccinal immunity in animals is the presence of a residual immune background in the form of colostral or passively-introduced antibodies. The present study was undertaken to determine the effects of local instillation of hyperimmune serum on the immunogenic properties of the TK-A virus-vaccine against infectious rhinotracheitis (obtained from the All-Union Institute of Experimental Veterinary Science). Six 18-member groups of calves were used as

test animals, these being tested for the neutralization reaction and the direct hemagglutination reaction, following both vaccination and control infection, at intervals of 8 and 18 days, and 8 and 36 days, respectively. Colostral antibodies, and antibodies instilled in the upper respiratory tract 2 days before vaccination, were found to have a negative effect on the formation of postvaccinal immunity against infectious rhinotracheitis in horned cattle; the application of hyperimmune serum to cattle 5-8 days before active immunization had no immediate effect on the formation of postvaccinal immunity. Table 1.

II. Behavioral Sciences
Engineering Psychology and Ergonomics

USSR

ARTIFICIAL INTELLIGENCE AND EMPIRICAL PREDICTION. A SPECIAL COURSE FOR STUDENTS OF NOVOSIBIRSK STATE UNIVERSITY

Novosibirsk ISKUSSTVENNYY INTELLEKT I EMPIRICHESKOYE PREDSKAZANIYE. SPETSKURS DLYA STUD. NGR [Translation as above] in Russian 1975, 85 pp

[From REFERATIVNYY ZHURNAL, KIBERNETIKA No 9, 1976 Abstract No 9V892 K, from the annotation]

ZAGORUYKO, N. G., Novosibirsk State University

[Text] This book is intended for Novosibirsk State University students taking the author's special course "Empirical Prediction and Perception of Patterns;" it is a textbook devoted to one of the most acute areas of the general problem of artificial intelligence. The author discusses questions of the formal presentation of initial data in the form of hypothetical presumptions, and also the recording of concrete observations. The nucleus of the theory of empirical prediction is the problem of machine methods of observing patterns, or the problem of reinforcing empirical hypotheses. The author gives examples of concrete algorithms of empirical prediction, along with a description of various tasks in the recognition of patterns; these are stated in the unique terminology of the theory of empirical prediction.

USSR

MATHEMATICAL PROBLEMS IN THE THEORY OF INTELLIGENT MACHINES

Kiev MATEMATICHESKIYE VOPROSY TEORII INTELLEKTUAL'NYKH MASHIN [Translation as above] in Russian 1975, 84 pp

[ACADEMY OF SCIENCES UKRAINIAN SSR, INSTITUTE OF CYBERNETICS]

[Text] (Citation of book).

BULGARIA

PSYCHOPHYSIOLOGICAL METHODS OF DIAGNOSING OCCUPATIONAL APTITUDE FOR TRANSPORT

Sofia SUVREMENNA MEDITSINA in Bulgarian Vol 26 No 9, 1975 signed to press Jan 1975 pp 32-36

RAYCHEVA, V., Transport Medical Institute, Sofia (director: Senior Science Associate Khr. A. ZAPRYANOV)

[Text] Modern transport creates constant neuroemotional stress and continually sets more and more new requirements for neurodynamic plasticity and individual characteristics of the principal parameters of higher nervous activity. This increases the importance of a medico-psychological assessment of occupational aptitude for transport and calls for establishment of an appropriate diagnostic approach. The article presents data on modern psychophysiological methods of diagnosing occupational aptitude for transport.

Above all, high skill is necessary for successful employment in transport. Weighty preconditions for getting a job are certain bodily characteristics and personality traits that are looked for and diagnosed during occupational selection.

Modern transport creates constant neuroemotional stress and continually sets new requirements for neurodynamic plasticity and individual characteristics of the principal parameters of higher nervous activity (1, 2, 7, 9, 13).

This increases the importance of a medicopsychological assessment of occupational aptitude for transport and calls for establishment of an appropriate diagnostic approach. Existing methods must be reviewed, and appropriate ones selected for constructing diagnostic constellations characterizing the somatosympathetic and neuroemotional stability of subjects (3, 5, 8, 10). The main endeavor in this selection is maximal objectivization of the summary evaluation and general improvement of the diagnosis of occupational aptitude for transport. It is customary to use a broader spectrum of methods that investigate various aspects of the most characteristic psychophysiological parameters. Very often, now, both electrophysiological and biochemical methods are used, which supplement and detail the individual characteristics revealed in a sociability evaluation (4, 6, 11, 12, 14, 15).

The collected information is interpreted according to multifactorial analysis programs developed and adapted for biological systems. In developing correlation matrices we very often find that the amplitude-frequency response characteristics of electrical biosignals, the bioconstants of body fluids and the quantitative data of the other methods employed have a significant relationship of a high order (8, 12, 14, 15).

Final evaluation is based on a flexible combining of a philosophical-synthetic macro-approach with analytic electrophysiological and biochemical micro-methods of investigation, with correlation accomplished by means of computer equipment (3, 14). An important trend in modern psychophysiology is the establishment of typologies and their ordering into defined constitutional structures. Psychophysiological grouping takes into account functional parameters of higher nervous activity that are more stable in time.

Evaluation of the psychophysical qualities that are placed under greater stress in transport and flexible constant combination of all the requirements of occupational selection constitute the creative factor in the diagnosis of occupational aptitude. Evaluation of occupational aptitude must permit delving into transport behavior or contain a prediction of the candidate's possible behavior as a participant in the transport system. Decisive for overall evaluation is the transport worker's behavior in his natural working conditions--at the steering wheel, at the control panel, at the helm. That is why examination methods must maximally facilitate making laboratory experimental conditions approximate a real-life experiment (7, 14, 15).

The work of medicopsychological examination at transport institutes in West Germany, Switzerland and Austria is organized in this way to a great extent. In recent years, psychophysiological laboratories for transport work in our country, Yugoslavia, East Germany, Czechoslovakia etc. have had a similar development, too.

The transport institutes in Western countries give little attention to the selection of transport workers. The preliminary examination is not very detailed and the examination centers are supplied with only the minimum of necessary equipment, mainly for the visual analyzer, slide projectors etc. Extended testing of occupational aptitude is done there if an infraction is committed, a crash is caused or the precondition of an accident is created. Use is made of methods to evaluate the individual's general mental capabilities, specific mental qualities, psychophysiological peculiarities observed by test and apparatus, biochemical profile, etc.

Some of the more frequently used methods are as follows:

Method for evaluation of general mental capacity--(Benet) technical aptitude test. It is a combined approach for the evaluation of intelligence. By it are evaluated mechanical and technical capabilities in the solution of simple technical problems that arise while driving vehicles (practical intelligence).

Of the methods for special capabilities, use is made primarily of tachistoscopic methods for testing optical acceptance and orientation in transport situations, attention-burdening capacity, sensomotor coordination, behavioral reactions under working conditions, etc.

Slides are projected in order to trace intertwined lines, objects to be transported, multistage transport situations in confused order, etc. What is

required is the ability to find one's bearings rapidly during a brief projection and to arrange the stages in sequence in time. The projecting is done according to a standardized program of increasing complexity and short display.

Brickencamp test d^2 for evaluation of attention-burdening capacity and its fluctuations: The test consists of 14 lines of characters (stochastic order) of p's and d's from the Latin alphabet and represents a proofreading test. The characters are accompanied by one or two dashes placed below or above the letters. The assignment is to strike out all d's with two dashes. Omitted or erroneously deleted d's count as errors. Twenty seconds are allowed to do each line. Three more important values emerge from the obtained quantitative information when the data are evaluated: 1) total number of processed character--figure represents total achievement; 2) total number of errors; 3) ratio of the former to the latter as a percentage (percentage error). The quantities show the speed and accuracy with which the subject works. A working curve of achievement characterizing stability in the manner of working is constructed by connecting the last dots of what was achieved for every line. Comparison of maximum and minimum achievement reveals the width of the range within which achievement fluctuates.

Methods of this kind are fitting for transport workers because they simulate transport activity well. Observations have shown that in transport it is not necessary to maintain constantly a high degree of concentration of attention, but rather a constant average level of attention that can rapidly rise to a maximum if the demand is suddenly made.

Hamburger-Wechsler test (HAWTE): Of the general intelligence tests, it is one of the most frequently used and best-standardized methods, and is adapted to application in the sphere of transport work. Actually, it is a collection of more tests, six subtests forming the verbal part (language-related intelligence), and five measuring practical intelligence.

Various methods are employed to test the personality from a more generalized standpoint (questionnaires in the form of an interview, construction of scales, biopsychogram etc.).

The FPI (Freiburger Personality Inventory) is employed for personality evaluation. After an interview comprising 112 questions, the data are mathematically processed, yielding eight generalized psychophysiological parameters which reflect various personality aspects expressed quantitatively: nervousness, psychosomatic sensitivity, aggressiveness, emotional immaturity, depression and lack of self-confidence, irritability, sociability, stability, dominant drives, oppressiveness, self-critical attitude, extro- and introverted character, emotional lability, etc.

The test has been standardized after long validation on hundreds of subjects. From the obtained data a psychogram can be constructed which graphically reflects how pronounced individual qualities are and the proportion which they represent of the total evaluation.

The MMO (Maudsley Personality Questionnaire according to Eysenck) is also constructed on the interview principle. In order to exclude the influence of chance, answers must not be considered individually, but as a connected whole. The method provides useful information regarding tendencies towards "heightened mental disturbance," psychoemotional lability, an inclination towards neurotic reactions and capacity for critical self-evaluation, and contributes to a general personality characterization of the individual. It is applicable also in the case of persons with some changes in the characterological sphere, who are subject to prolonged neuroemotional overstress.

Color Pyramid Test: A semiquantitative evaluation of certain personality qualities (according to Professor Heiss) according to the choice of cubes while working with the test, and attitude towards various colors.

KGR-30 (according to Dr A. Mueller) is a questionnaire which aims at discovering dangerous asocial inclinations towards lowered self-control, shortcomings in conduct and aggressive acts towards other participants in the transport system. It usually gives higher values for persons who have committed some infraction or had an accident; it reveals with about 93 percent probability anyone predisposed towards "committing infractions" or being a potential social danger and facilitates a probabilistic prognosis of accident proneness.

Apparatus for determining complex sensomotor reactions: The apparatus is constructed analogously to the chronoreflexometer, but is supplied with a writer and recording is simultaneous. It has an attachment to feed complex programs (various stimuli in random order) at a prescribed rate. Such devices can be attached to any chronoreflexometer, which makes it many times easier for the tester, makes data-recording objective, and permits high degree stressing of the neuroemotional system in order to produce a reaction, if necessary, during an acute time shortage.

Road test: Two-hour driving stint under normally heavy road traffic conditions is performed under the observation of a psychophysiologist- or psychia-trist-tester. The test affords a real opportunity of making a practical personality evaluation (temperament, character, behavioral reactions and reaction rate, capacity for rapid orientation--especially in emergency situations, emotional and motor stability, alertness level, quick thinking, and much more). All the personality traits necessary for accident-free driving are revealed especially clearly during the operation of a vehicle. Essentially, the test is operation under conditions of a real-life experiment.

In all the described test methods, observation can be expanded by recording, simultaneously with solution of the psychological problem, a number of physiological parameters characterizing the activity of the cardiovascular system, sympathetic reactivity, neurodynamics, etc. Recordings are made by a polyphysiograph, can be made at a distance, and can be employed as well under fully automated experimental conditions in chambers specially constructed for the purpose.

The neurophysiological laboratory of Professor C. G. Jung is working on behavior analysis by means of a telemetric device. Subjects are characterized and typologized by methods that are known in practice, while motor activity in various pursuits (ranging from those programmed for data to free play) is measured by a specially made device. The device weighs 80 grams, is 8 centimeters long and when attached to the arm (like a watch) causes the subject no inconvenience; the latter performs his experimental assignment unperturbed. In discussion of the results, interesting quantitative evaluations are made of the effector sphere, mental capacity for stress, behavioral peculiarities, etc.

An electronic device for testing occupational aptitude for transport, designed by Strasser and Mueller-Limroth, is of interest. By means of it a methodological approach making possible a diagnosis of occupational aptitude has been devised. Tests are taken in an air-conditioned insulated chamber on a comfortable chair in front of a steering device and a television screen. The frequency and amplitude of the diverse electric signals present on the screen, including alinement of the lines with the isoelectric line, vary with the movement of the steering wheel. The subject's task is to keep the light signals of the oscillograph in as straight a line as possible by means of the steering apparatus. Errors (wrong movements of the steering wheel) are counted, recorded and transmitted as sounds to act upon the subject according to the feedback principle via a microphone. Synchronously with the stressing, respiratory, cardiac and cerebral action are recorded on the polyphysiograph.

The described methods are employed in various combinations depending on the requirements of the examination. One test by all the enumerated methods takes at least 2-3 hours. A full-scale examination is conducted only with sworn testimony.

Indications of the degree of thoroughness in the various examinations are specified by edicts with the force of binding law.

Legal transport examinations are conducted too (extensive surveys and psychophysiological characterization of all vehicle operators who have an accident).

A medicopsychological examination regarding aptitude for transport is made in the laboratory of transport medical institutes. The Central Transport Medical Institute makes full-scale examinations with sworn testimony and analyses soundly based on theory.

Our organizational structure is similar and is in the process of completion and expansion.

Many of the above-described methods have been adapted and standardized for our conditions and additionally tailored to the modern level of apparatus and statistical methods of analysis. They are the basis for the development of a new, more interdisciplinary diagnostic approach in our examination research and scientific development work in the field of occupational aptitude for transport.

The obtained data are processed quantitatively, are made to conform with typological characteristics and grouped, and the possibility is thus created for a more thorough look at and scientific approach to the construction of a summary evaluation.

There are several possibilities in the interpretation of results: those people with little mental capacity and minimal results even without great neuropsychic stress, most often with lability in sympathetic and emotional reactivity are definitely not suitable for transport and are predisposed to breakdown in extreme conditions; evaluation is more difficult in borderline cases with fluctuating results, especially in candidates with some defect. A more detailed review is needed then of the evaluation to determine whether mental compensation for the defect is possible with the resources of the personality.

Persons with well-marked neurosympathetic, psychoemotional and sensomotor reactivity and well-balanced, strong types of higher nervous activity, mainly second-signal types, are more suited for transport work.

Mathematical machine processing by multifactorial correlation analysis creates the possibility of objective and comprehensive evaluation of the numerous data obtained from testing by all the described methods. From the example of other countries we have, for several years, been employing a more comprehensive diagnostic approach devised during our practical experience and we hope for appreciable improvement in the near future of the diagnosis of occupational aptitude for transport.

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